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EEI BULLETIN

Convention Issue

JUNE, 1961

ELECTRIC UTILITY INDUSTRY Statistics IN THE UNITED STATES

for FEBRUARY 1961

Current Statistical Data Covering 100 Percent of Industry

(Includes Investor-Owned Companies, Cooperatives, and Government-Owned Utilities) – February, 1961

	Contiguous U. S. 1961	Contiguous U. S. 1960	%	Alaska and Hawaii, 1961
SOURCE AND DISPOSAL OF ENERGY				
NET GENERATION* (Kwhr in Thousands)				
By Fuel Burning Plants	49,018,003	47,806,757	+ 2.5	
By Water Power Plants	10,244,704	12,523,141	—18.2	
Total Net Generation	**59,262,707**	**60,329,898**	**— 1.8**	
Net Imports from Canada and Mexico	90,282	296,858	—69.6	
Purchases from Industrial Sources	165,417	219,736	—24.7	
Energy Used by Producer	174,455	405,496‡	—57.0	
Net Energy for Distribution	**59,343,951**	**60,440,996‡**	**— 1.8**	
Energy Lost and Unaccounted for	1,042,359	3,449,103‡	—69.8	
Company Use and Free Service	200,864	182,558‡	+10.0	
Sales to Ultimate Customers	**58,100,728**	**56,809,335‡**	**+ 2.3**	
CLASSIFICATION OF SALES†				
NUMBER OF CUSTOMERS–As of February 28, 1961	**1961**	**1960‡**		
Residential	51,238,856	50,465,642	+ 1.5	173,075
Commercial or Industrial:				
Small Light and Power	6,881,417	6,681,013	+ 3.0	29,852
Large Light and Power	455,556	439,295	+ 3.7	1,064
Other Customers	207,035	201,785	+ 2.6	969
Total Ultimate Customers	**58,782,864**	**57,787,735**	**+ 1.7**	**204,960**
ENERGY SALES–During month of February (Kwhr in Thousands)				
Residential	18,838,732	17,629,644	+ 6.9	67,610
Commercial or Industrial:				
Small Light and Power	9,943,723	8,821,998	+12.7	38,271
Large Light and Power	26,855,744	28,099,220	— 4.4	61,053
Street and Highway Lighting	559,958	529,791	+ 5.7	3,096
Other Public Authorities	1,385,873	1,256,234	+10.3	745
Railroads and Railways	444,811	430,425	+ 3.3	—
Interdepartmental	71,887	42,023	+71.1	546
Total to Ultimate Customers	**58,100,728**	**56,809,335**	**+ 2.3**	**171,321**
Revenue from Ultimate Customers (Thousands)	**$997,602**	**$952,027**	**+ 4.8**	**$4,644**
RESIDENTIAL SERVICE				
AVERAGE CUSTOMER DATA–for 12 months ended February 28. (New Series)				
Kilowatt-hours per Customer	3,891	3,654	+ 6.5	
Average Annual Bill	$95.72	$91.35	+ 4.8	
Revenue per Kilowatt-hour	2.46¢	2.50¢	— 1.6	

* By courtesy of the Federal Power Commission.

† To conform with the new FPC "Uniform System of Accounts," the data reported as "Rural" have been assigned to other appropriate classifications.

‡ Revised to reflect estimates for non-reported data not previously included and adjustments to earlier estimates.

June, 1961 **EEI BULLETIN**

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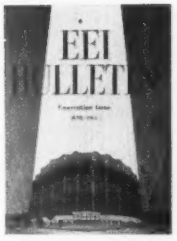

COVER ILLUSTRATION: Artist's conception of the investor-owned electric utility companies' building to be erected for the New York World's Fair. The "tower of light" will have the greatest concentration of light — 24-billion candlepower — ever generated. See story on page 249.

The EDISON ELECTRIC INSTITUTE BULLETIN is published monthly, except bi-monthly in July and August, by the Edison Electric Institute, an association of electric light and power companies in the United States and its territorial possessions. Its affiliate members consist of investor-owned electric utilities in North, Central and South America and contiguous islands in the Western Hemisphere.

The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

Closing date for the BULLETIN is the tenth of the month preceding the month of issue.

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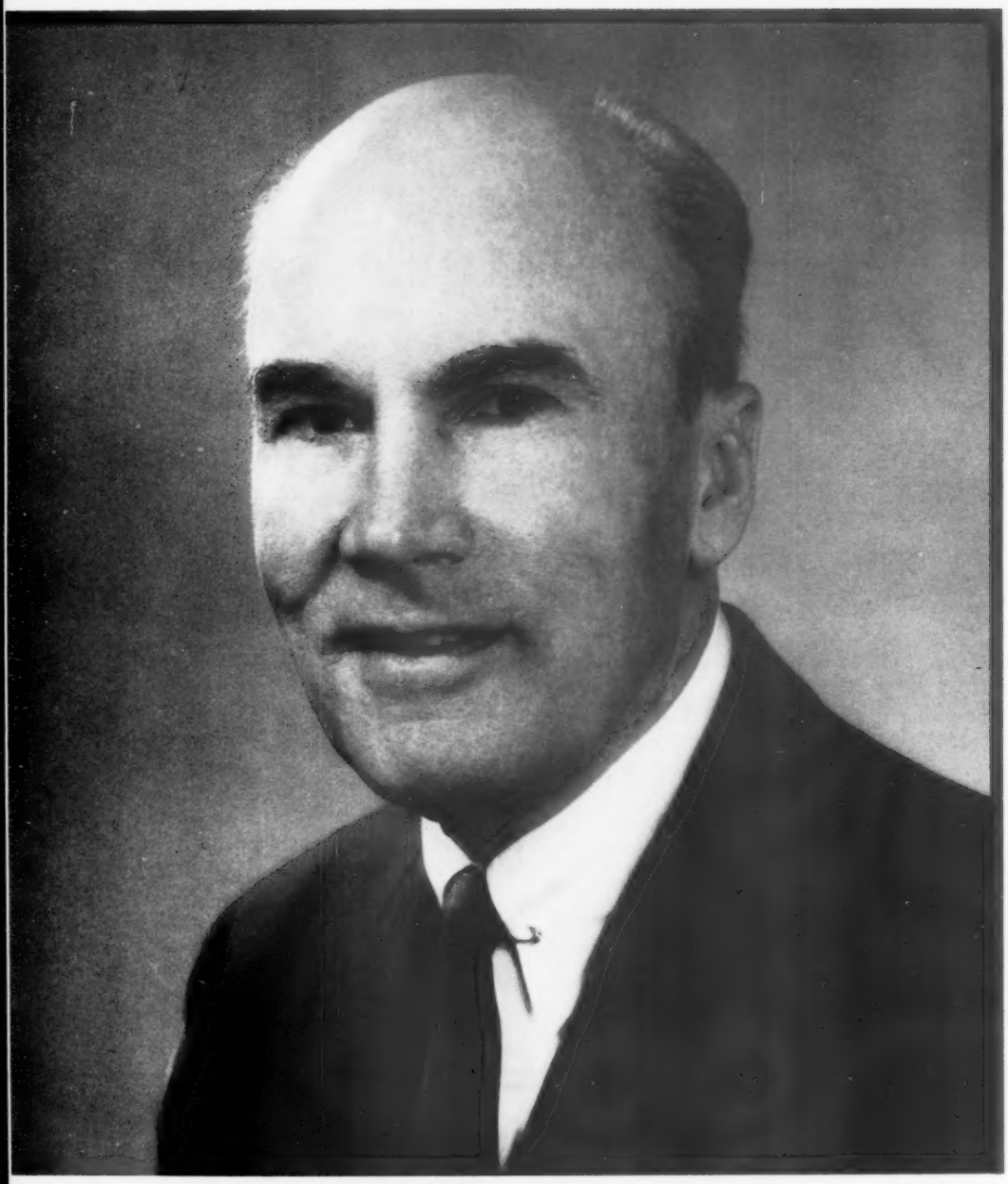


PHILIP A. FLEGER
Newly Elected President
of the Edison Electric Institute

"Targets for Tomorrow" Defined at EEI Convention

THE 29th Annual Convention of the Institute, which took place in New York City, June 5-7, set an attendance record for any EEI convention except those which have been held in Atlantic City. More than 3,000 registered for the three-day Convention, which had as its theme, "Targets for Tomorrow in Electric Power."

Electric company representatives and their guests from all parts of the nation heard widely recognized authorities report on such important subjects as:

- Atomic power.
- Research and development.
- Prospects for the industry to the year 2000.
- Elements in financing the industry's construction program.
- The national Live Better Electrically sales promotion activity.
- The relation between Russia and the United States in electric power production.
- The political and economic climate ahead.
- Development of industry managers for the future.
- Public relations.
- The industry's plans for the 1964-65 New York World's Fair.

Sherman R. Knapp, President of the Institute, and President of The Connecticut Light & Power Co., told the investor-owned electric utility company representatives that the industry must arm itself for a future of intense competition if it is to reach its growth targets.

"The public is pretty well satisfied with the way the investor-owned public utility industry functions within the framework of existing Federal regulation," Mr. Knapp pointed out . . . "Competition always has played, and always will play, a vitally important role in keeping electric rates in line. Much of our business is highly competitive. In order to grow as we have grown and expect to grow in the future, our rates for electricity must be competitive with other fuels and other means of doing the jobs our customers want to have done."

Referring to the growth of Federal government power operations, Mr. Knapp cited the plans of the Interior Department which, he said, "if carried out, would constitute the highway to complete nationalization of our industry."

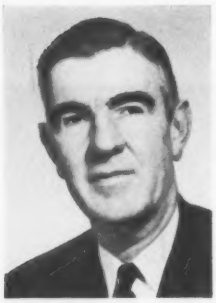
The investor-owned utility industry, in spite of the handicap of having to compete with subsidized government power, has had a remarkable record of growth, Mr. Knapp said. "Through good times and bad, new uses for electricity in the home, in our commercial establishments, and in industry have resulted in new sales records year after year," he added. "It is now one of America's largest industries, with assets of $50 billion, and an annual rate of expenditure for new equipment and facilities for supplying service amounting to about $3½ billion. This represents about 10 percent of all business capital expenditures."

Mr. Knapp said that load forecasts indicate that "it is reasonable to expect our loads to continue to grow through the 1960's at the historic rate, which means doubling every 10 years."

"If these forecasts are to be realized, we have much work to do in a number of different categories," he explained. "We not only need to aim for the future—we must arm for it."

Unless we develop a firm concept of *limited* government, and evolve articulate support for this view, the

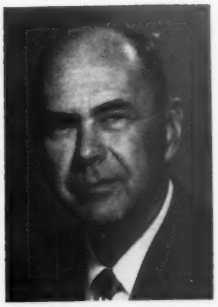
NEW MEMBERS OF THE EEI BOARD OF DIRECTORS



J. M. BELL, JR.
President, New York State Electric & Gas Corp.

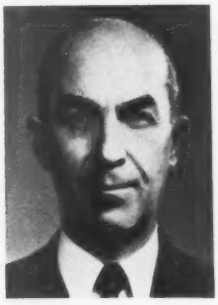
WALTER BOULDIN
President, Alabama Power Co.

P. O. CANADAY
President, Arkansas Power & Light Co.



W. J. CLAPP
President, Florida Power Corp.

C. B. DELAFIELD
Vice President, Consolidated Edison Co. of New York, Inc.



B. L. ENGLAND
Chairman, Atlantic City Electric Co.

R. H. GERDES
Executive Vice President, Pacific Gas and Electric Co.

N. B. GUSSETT
Chairman, Iowa Power and Light Co.

S. R. KNAPP
President, The Connecticut Light & Power Co.

D. C. LUCE
President, Public Service Electric and Gas Co.

W. B. McGUIRE
President, Duke Power Co.

K. M. ROBINSON
Chairman, The Washington Water Power Co.

PHILIP SPORN
President, American Electric Power Co., Inc.

J. B. THOMAS
Chairman, Texas Electric Service Co.

J. T. WOLFE
Chairman, Baltimore Gas and Electric Co.

governments by 1970 will absorb more than 40 percent of our income, warned Dr. E. P. Schmidt, Director, Economic Research Department, U. S. Chamber of Commerce.

Dr. Schmidt told the Convention that the "central government has lost all sense of the distinction between nationwide problems (fire control, juvenile delinquency) and truly national problems which can only be handled by the central government."

Declaring that in international relations "our record and plight have reached a new and frighteningly dangerous low," Dr. Schmidt charged that many people are "confused" because our nation lacks basic goals and principles like those stated in the Bill of Rights and the Declaration of Independence.

"Where human freedom has failed," he declared, "government has become the tyrant." Emphasizing that we should understand "the proper structure, nature, and function of government," he stressed that we need a *strong* but *limited* government.

Suggesting that perhaps political and economic liberty, human liberty and diffused power are being defended badly by devotees of freedom, Dr. Schmidt said that "we must improve ourselves first before we tackle those who, wittingly or unwittingly, are paving the way for the total-state."

Andrew Heiskell, Chairman of the Board, Time, Inc., suggested that the power industry can not only help the nation to live better electrically, but also to live better as a free nation in a world that "wants very much to be free."

He said that the electric industry is still young, "as industries go," and today it is on the threshold of its greatest period of growth, and its promise is greater than it has ever been.

"Your power companies are part of our free enterprise system," he told the Convention, "and so they share our over-all stake in freedom itself."

Willis Gale, Chairman, Commonwealth Edison Co., and Chairman, EEI Research Division Executive Committee, described the expanded research program of the Institute.

"The program fulfills a very important need in the area of applied research," he said.

Mr. Gale outlined the five aspects of the present policy of the EEI Research Division regarding selec-

(Continued on page 167)

Philip A. Fleger Elected President of Edison Electric Institute

PHILIP A. FLEGER, Chairman of the Board and President of Duquesne Light Co., was elected President of the Edison Electric Institute by its Board of Directors. Installation of the new President was made June 7, at the closing session of the Institute's 29th Annual Convention.

Vice President of the Institute since last June, Mr. Fleger succeeds Sherman R. Knapp, President of The Connecticut Light & Power Co.

After graduation from the University of West Virginia Law School in 1926, Mr. Fleger joined the Philadelphia Co. system in Pittsburgh, of which Duquesne Light was a part. He was advanced to general attorney of Philadelphia Co. in 1939, elected vice president in 1940, senior vice president in 1942, executive vice president in 1946, and president in 1952.

In 1950 Mr. Fleger was elected chairman of the board and chief executive officer of Duquesne Light, and on July 1, 1958, he also became president.

He has been a member of the EEI Board of Directors, the EEI Advisory Committee, and has served as chairman of the EEI General Division Executive Committee. He is also a member of the Executive Committee of the Association of Edison Illuminating Companies.

In 1956 Mr. Fleger received the Duquesne University Award for Leadership in Management. In 1957 he received an award as Man of the Year in Business from the Pittsburgh Junior Chamber of Commerce. In 1959 he received an award as Western Pennsylvania's outstanding industrialist from the Western Pennsylvania Chapter, Society of Industrial Realtors.

Mr. Fleger is vice chairman and a director of the Hospital Planning Association of Allegheny County, and a member of the Executive Committee, Pennsylvania Economy League (Western Division). He is a director of the Pittsburgh Regional Industrial Development Corp., the Western Pennsylvania Hospital, the Health Research and Services Foundation, the United Fund of Allegheny County, and a member of ACTION-Housing, Inc.

Mr. Fleger is a member of the Duquesne Club, Fox Chapel Golf Club and the Law Club of Pittsburgh; Rolling Rock Club of Ligonier; and the Seigniory Club of Quebec. His fraternity affiliations are Alpha Chi Rho and Phi Delta Phi.

Industry Can Overcome New Campaign of Government Power Proponents

Remarks of Philip A. Fleger in Accepting the Presidency of Edison Electric Institute

I CAN think of few honors that could mean more to someone who, like myself, has spent all of his business life in the electric utility field than to be chosen to serve as President of the Edison Electric Institute.

Of the many fine groups and associations in our industry, EEI is the most truly national. This association now represents about 97 percent of the investor-owned electric companies of the country. Through it, we have been able to reach a high degree of unity.

But recent developments in our national capital indicate that, in the very near future, we may have to act with even greater unity and with even greater awareness of national problems affecting us than we have in the past.

Opinions in Washington

Some people in Washington seem to think that the electric utility industry is a large part of the administration's New Frontier. They are re-emphasizing the development of wholly unnecessary government power projects. They are discussing plans for an equally unnecessary Federal transmission system. They are espousing the most extreme interpretations of the so-called "preference clause." And they are encouraging rural electric cooperatives to serve factories and stores and other non-farm customers—contrary to the worthy intent of the Rural Electrification Act.

Make no mistake about it. A new and greatly intensified campaign is being launched by the advocates of government power. We must be prepared to meet it. In doing so, we have a number of points in our favor.

The first is our record of service. We must continue to give our customers the best possible electric service. There can be no substitute for this.

Second is our record of economy. We must impress upon the American people the fact that we have kept our prices down in the face of rapidly rising costs, not by the threat of phony "yardsticks," but through continuing creative research directed toward better and more economical service.

Third is our record of vision. We must impress upon the public our continual building for the future, with capacity always ahead of demand. We must tell the people about our national network of connecting companies, available in any emergency, from Maine to California, from Puget Sound to the Florida Straits.

And fourth is our record of citizenship. What we have done and are continuing to do for our communities, our states, our regions and our nation is not only a constant source of pride for us, but for our customers as well.

These are our strongest points. But we cannot stand on them alone. We must show the American people the weak points of government power.

Let us show just how unnecessary and wasteful these Federal power projects are. Let us show why a Federal transmission system is equally unnecessary and wasteful. Let us show how the worthy intent of the Rural Electrification Act has been subverted. Above all, let us impress upon the people of this country that 20 percent of the nation's electric users—the customers of government-financed power projects—are being excused from more than three-quarters of the taxes which the other 80 percent—the customers of the investor-owned companies—pay through their electric bills.

Can Overcome Campaign

I am confident that we can overcome this new and greatly intensified campaign of the proponents of government power if the combined experience, strength, and wisdom of all of us in the investor-owned electric utility industry are working together, united for the common good.

I hope that I may prove of some service in our joint efforts to that end.

(Continued from page 165)

tion of projects to be supported by the Institute:

1. They should be carried out at the institutions best quailfied for the job.

2. The Institute ought not to undertake to support, either wholly or partly, the general research program of a particular manufacturer.

3. It does not seem practical to get involved with projects where our efforts would not be more than a drop of water in the ocean.

4. The institute, as a rule, should not engage in product research.

5. A further criterion should be that our projects are of interest to a broad cross-section of our industry.

Electric energy will play an increasingly important role in the national energy picture, Philip Sporn, President, American Electric Power Co., said. He predicted that electric energy would double its position from 19.5 percent in 1960 to 40 percent in the year 2000.

"In the 40 years that lie ahead," Mr. Sporn told the Convention, "there is a prospect of the total 1960 generation multiplying eight-fold to 6 trillion kilowatthours in the year 2000." At the same time, he predicted, the relative position of hydro, coal, oil, and gas would decline.

Mr. Sporn urged the investor-owned electric utility companies to develop electric energy as the single universal energy source, as they "take vigorous leadership in espousing new ideas and new principles of utility system growth and development." He said they should face the question of government power with courage, resourcefulness, and with a great sense of responsibility and soberness. The industry must develop the ability to defend itself, he said, and to sell the idea of free enterprise.

A three-part report on research by manufacturing companies was presented by L. J. Linde, Director of Engineering Services, Allis-Chalmers Manufacturing Co.; J. F. Young, General Manager, Electric Utility Engineering Operation, General Electric Co.; and Dr. J. A. Hutcheson, Vice President of Engineering, Westinghouse Electric Corp.

(Continued on page 168)

W. W. Lynch Elected Vice President of Institute

W. W. LYNCH, President of Texas Power & Light Co., has been elected Vice President of Edison Electric Institute.

After graduation from Texas A&M College in 1922, Mr. Lynch spent a year and a half with Westinghouse Electric Manufacturing Co., joining Texas Power & Light Co. in 1923. He served successively as design assistant, field electrician and foreman, and superintendent of distribution before he was elected vice president of the company in 1936. He was named executive vice president in 1947, and became president in 1949.

Mr. Lynch has been a director of the EEI and a member of its Executive Committee. He is vice president, director, and member of the executive committee of Texas Utilities Co.

In 1952, Mr. Lynch was named engineer of the year by the Dallas chapter of the Texas Society of Professional Engineers. Under his leadership, Texas Power & Light in 1955 received the electric industry's highest honor, the Charles A. Coffin Award, "in recognition of its distinguished contribution during the year 1954 to the development of electric light and power for the convenience of the public and benefit of the industry."

Well known in Texas industrial, agricultural, and civic circles, Mr. Lynch is a director and member of the Directors Committee of Republic National Bank of Dallas, a director and member of the Executive Committee of Employers National Insurance Co., Texas Employers Insurance Association, and Employers Casualty Co. He is president of Insurance Building Corp. and a director of Employers National Life Insurance Co., Dallas Citizens' Council, Trinity River Authority, and State Fair of Texas. He is a member of the Regional Executive Committee of Region Nine, Boy Scouts of America; a trustee of the Texas A&M Research Foundation, the Texas Research Foundation of Renner, Texas; of Southwestern Medical Foundation, and a member of the Advisory Committee of the University of Dallas.

W. W. LYNCH

(Continued from page 167)

In his address, "Will Russia Catch Up?" Edwin Vennard, Vice President and Managing Director, EEI, said that the facts show that America, the principal exponent of free economy, is by a wide margin outproducing Russia, the principal exponent of the government-planned economy.

"In the United States, we can, with reasonable confidence, deny ourselves the pleasure of spending our money in order to save and invest in the machinery of production with the hope of earning a reward," Mr. Vennard said. "This is the greatest stimulant to new capital formation that has yet been devised.

"A second stimulant to efficient production is competition, which is lacking when government is the sole supplier," he added.

"All these stimulants to efficient productivity we have here in America, but they are lacking in Russia . . . Let us carefully guard against inadvertently gravitating towards the government-planned economy with its lower productivity."

Electric company sales programs showing the advantages of all-electric living for homes, farms, office buildings, factories, and even whole communities must be expanded if competition from other energy sources and from government-owned power systems is to be effectively met, J. K. Horton, President, Southern California Edison Co., declared.

"The electric industry is involved in a fierce competitive struggle—first with other sources of energy, and second with government-owned utilities," he warned. "It will take all of our ingenuity and perseverance in the field of research, in the field of marketing, and in the area of practical politics for the investor-owned industry as presently constituted to maintain its role" in the all-electric future, Mr. Horton declared.

A total of $53 million dollars will be spent this year by EEI, individual investor-owned electric companies, and allies in presenting the Live Better Electrically picture to the American consumer, reported W. M. Shepherd, Vice President in Charge of Sales, Arkansas Power & Light Co., and Chairman, EEI Live Better Electrically Policy Committee.

Mr. Shepherd pointed out that the word "flameless" has become the center of the LBE advertising campaign, and has been well accepted throughout the nation, by the electric companies and by the public.

The EEI advertising schedule, Mr. Shepherd said, is concentrating mainly on print media (mostly national consumer magazines) which reach 70 percent of all U. S. households. He said that, although the LBE program is not considering the use of night-time television programs at this time, television has not been forgotten.

In 1961, he added, there will be 42 double-page LBE advertising spreads in national magazines, 13 of them in color; and 23 single-page ads, a total of 65 insertions for the year.

A panel discussion, moderated by C. B. Delafield, Vice President—Finance, Consolidated Edison Co. of New York, Inc., explored the "Elements in the Financing of the Utility Industry's Construction Program."

(Continued on page 256)

Philip A. Fleger, center, newly elected EEI President and Chairman of the Board and President of Duquesne Light Co., talks at the 29th Annual Convention with Sherman R. Knapp, left, EEI President for the administrative year just ended, and W. W. Lynch, right, newly elected Vice President of EEI, and President of Texas Power & Light Co. The Convention was held June 5-7.

Aiming for the Future

By Sherman R. Knapp
President, Edison Electric Institute

ON June 4, I had the distinct privilege and honor of participating in the ceremony by which Thomas Alva Edison was inducted into the Hall of Fame. It was an impressive ceremony in which many people took part. My brief role as a representative of the Edison Electric Institute consisted of the presentation of the Edison bust, and I think it would be appropriate for me to repeat a few comments which I made in connection with the presentation.

"For thousands of years before Edison developed the first electric light system, men had lived without the countless conveniences electric energy has given us. In less than a century, electricity has wrought great changes which have advanced our whole life and kind of living. But these momentous developments were not accomplished by the waving of a wand, no matter how magical the contrast between then and now may appear. Human imagination, thought, and effort on the part of millions of people brought about the benefits from the mighty force of electricity.

"What we have seen in the first phases of electrical progress is marvelous enough. What may come in succeeding phases may well be beyond our present ability to comprehend, but it is not beyond man's power to create."

We most frequently think of Edison in connection with his various inventions, particularly the incandescent lamp. While undoubtedly the invention of a practical electric lamp contributed importantly to the development of the electric utility industry, I believe that other activities of Thomas Edison were more directly responsible for the development and growth of this great industry of ours than was the light itself.

Edison's Business Vision

It is clear from reading Mr. Edison's biography that he had in mind from the beginning the whole system of generation, distribution, and utilization of electricity as a complete business. The development of the incandescent lamp was an important and, in fact, an essential part of the complete system, but without Edison's over-all concept and realization of the economic potential of the electric power business, I am sure that we would be a long way from where we are now. At the time of his death in October, 1931, just 52 years after the invention of the incandescent lamp, our industry had grown from nothing to a business with an investment in equipment and facilities of about $14 billion. Now, 30 years after his death, the investment of the investor-owned companies in our industry has more than tripled to a total of over $46 billion.

Credit to Edison

Edison deserves a full measure of credit as the founder of the electric utility industry. But he and many others who contributed to the industry's subsequent success as an important element of our free enterprise economy owe a great deal to the form of government under which they were permitted to operate. The early days of the formation of the Edison Electric Light Co. involved many discouragements, but at least he was not faced with the problems of Federal government competition and harassment which would undoubtedly have slowed his progress materially, or perhaps stopped it altogether because of utter frustration. Incidentally, I think Mr. Edison would have been thrilled by today's Live Better Electrically program, which features the word "flameless." In this connection here are the headlines from the front-page story in the *New York Herald* for Sunday, Dec. 21, 1879:

"EDISON'S LIGHT
THE GREAT INVENTOR'S TRIUMPH
IN ELECTRICAL ILLUMINATION
A SCRAP OF PAPER
IT MAKES A LIGHT WITHOUT GAS
OR FLAME, CHEAPER THAN OIL
SUCCESS IN A COTTON THREAD"

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, June 5, 1961.

Role of Regulation

It was recognized early in the industry's history that it would be uneconomical for a given area to be served by more than one supplier because of the high ratio of capital investment to revenue. In this country, regulation of utility enterprises by governmental authority became the most widely used means of seeing that the public interest was protected against the basically monopolistic character of the public utility industry.

Almost from the beginning, there have been those who have believed, with various degrees of enthusiasm, that the job of supplying electric power should be a governmental function. They felt it could not be entrusted to investors whose primary incentive was profit. These advocates of government ownership claimed vociferously that the regulatory process could never adequately protect the public interest.

In spite of the continued insistence on this theme by government-power advocates, there is simple evidence that the combination of regulation and competition has done an eminently satisfactory job in protecting the public.

It is also clear that, for the most part, the public is pretty well satisfied with the way the investor-owned public utility industry functions within the framework of existing state and Federal regulation.

It seems to me that the most impressive evidence that our present system of regulation has done a good job stems from the fact that the average price of a residential kilowatt-hour has dropped from about 6 cents at the time of Edison's death in 1931, to less than 2½ cents per kilowatt-hour today. During the same period, the cost of living has gone up 96 percent.

The regulatory agencies have been vigorous in the performance of their duties and, although the ways in which these agencies function vary somewhat from state to state, the end result has been effective.

Unfortunately, not more than a small percentage of our customers realizes that there is such a thing as a public utilities commission which is responsible for looking after the interests of the consumer. Furthermore, the small percentage that does know about regulation of utilities frequently has the erroneous idea that it is simply a device for guaranteeing a profit to the company.

I am sure friends or acquaintances have often commented that the utilities have it soft because whenever the going gets rough all we have to do is ask the Public Utilities Commission for higher rates. They fail to understand the purpose of regulation and the way it works. One doesn't have to look beyond the transportation industry to understand that there are forces always at work that cannot be offset by higher rates. These competitive forces can hold down or eliminate profits altogether, regardless of the regulatory climate.

Competitive Considerations

Competition always has, and always will, play a vitally important role in keeping electric rates in line. Much of our business is highly competitive. In order to grow as we have grown, and expect to grow in the future, our rates for electricity must be competitive with other fuels and other means of doing the jobs our customers want to have done.

In some applications it is not difficult for electricity to meet and beat the competition, as for instance in the field of refrigeration. Almost from the first year the electric household refrigerator was introduced, the iceman began to disappear. The electric refrigerator was not only cheaper to operate, but also cleaner, more dependable and immeasurably more convenient. The ability to compete in the domestic refrigeration market, as early as the middle Twenties, resulted in the adding of something of the order of $5 billion to the revenues of investor-owned utilities during the depression decade from 1930 to 1940.

Another major source of revenue from the home is the electric range, but here the competitive situation has been considerably tougher. Cost alone is not the controlling factor in this instance, and there are still many housewives who, for assorted reasons, prefer to use some less-modern fuel than electricity to do the cooking job.

The competition is still tougher in the water heating market. As for electric house heating, there are some real cost hurdles to overcome in this part of the country. Nevertheless, in our little area up in Connecticut, we already have almost 500 complete electric heating customers on our lines. We have learned, in some instances the hard way, that when people want to heat their homes electrically, they are willing to pay for it, and we had better be ready and anxious to furnish them the best kind of heating service there is.

Live Better Electrically

The Live Better Electrically program of national advertising and sales promotion sponsored by EEI is itself convincing proof of the keen competition in our business. The 139 EEI member companies which participate in it felt a need for a vigorous national program. These companies, which serve about 70 percent of the residential and rural customers of all investor-owned companies, are currently contributing over $2½ million a year to the program. In addition, our industry allies—manufacturers, distributors and others—are spending about $8 in support of the program for every $1 contributed by EEI member companies for the LBE program.

When I praise the activities of the LBE program, I speak not only as President of EEI but as President of a combination gas and electric company. I know that every one of our companies has its own sales problems—problems that can only be solved in its own service area. But the LBE program can help everyone in the industry. In fact, through its national advertisements it helps everyone, whether we ask it to or not.

The program is a good one. It deserves the support of all of us. I hope that companies that are not participating will see fit to help underwrite this program, which is so important to the continued healthy growth of our industry.

What Surveys Show

As to whether the public is reasonably satisfied with the job the investor-owned utility industry is doing, I think the answer can be found in public opinion surveys, and also by analyzing election results where the electric utility issue has been involved.

Over the past 18 years, several opinion surveys have been made to find out how we are regarded by the public at large and by various segments of it—for we have come to realize, more and more, that what people know and think about us is vitally important to our progress and even to our survival.

Surveys made for the Electric Companies Advertising Program by Opinion Research Corp. reveal gradually increasing support for investor ownership of the local electric utility companies, as opposed to government ownership. These studies found, in 1943, that 55 percent of the public favored government ownership, 31 percent favored investor ownership, and 14 percent had no opinion. Today, the position on ownership has been reversed, with 46 percent favoring investor ownership, 38 percent favoring government ownership, and 16 percent holding no opinion. In spite of this favorable trend, we wonder why as large a proportion as 38 percent should apparently prefer government power.

Opinion Research's just-completed 1961 survey clearly indicates the crux of the matter seems to be understanding, or rather lack of it. The great majority of people like the electric service they have now, but substantial numbers who are actually served by investor-owned companies—25 percent—believe they are served by a government agency! And, concurrently, two-thirds of our own customers—66 percent—do not know that the Federal government is in the power business.

Minor Importance to Voters

Detailed studies of last fall's election results indicate that, even in the Pacific Northwest where there is more conflict between government power and investor-owned power than in any other part of the country, the power issue was of minor importance in the minds of the voters. In this connection the study made by Central Surveys, published January, 1961, says:

> "Frequently the same voters on the same day have cast majorities for candidates for different major offices (governor and senator, senator and congressman, etc.) although the winning candidates have had directly opposite records or announced opposite views on the electric power issue. In state legislative races, voters in the same county have elected—on the same day—both of two candidates with opposite records or views on the issue."

In another Central Surveys' study, also dated January, 1961, 700 members of rural electric cooperatives in Indiana were interviewed with some very interesting results. For instance:

- Only 12 percent selected rural electrification as an issue from a list of eight domestic issues, and it was tied for last place.
- Eighty percent had no opinion as to which candidates for Congress took the best stand on rural electrification.
- Forty-nine percent had no opinion as to whether rural electric co-ops pay the same taxes as investor-owned companies, and 27 percent said that they do. Only 24 percent correctly said that they do not.
- Sixty-four percent said that rural electric co-ops should pay the same taxes as investor-owned companies, and 23 percent had no opinions. Only 13 percent said they shouldn't.
- Seventy-one percent said they had never heard of the National Rural Electric Cooperative Association, and 87 percent said they had never heard of Clyde Ellis in connection with rural electrification.

These surveys and many others that have been made throughout the country indicate that the public takes its electric service pretty much for granted. In other words, apathy runs riot. The only logical conclusion is that our customers recognize that they are getting good service at reasonable rates. Beyond that, they have more important things to worry about, such as Cuba, Laos, the space race—or the latest one-cent increase in the price of a quart of milk.

The Two-Foot "Yardstick"

It has been the contention of the proponents of government power that, because of the monopolistic nature of the business of electricity supply, there should be areas where the government itself was in the business of supplying power so that there could be a yardstick against which to measure the reasonableness of rates. The TVA used this excuse as its justification for the rapid expansion of its power business, and similar ideas are expressed in connection with other Federal government, state and municipal power operations. I personally have no quarrel with the yardstick concept, provided the yardstick which is to be used to measure the adequacy of our performance is actually 36 inches long.

At the time the yardstick idea was originated, taxes, which constitute the major differential between investor-owned and government-owned power operations, were a relatively minor consideration compared to their present levels, and consequently there was not too much distortion in the length of the yardstick. Today, however, local, state and Federal taxes are taking a 24 percent bite out of our total revenues as compared with a nominal and very gratuitous bite of about 3½ percent out of the revenues of government utilities. Taxes also play an important part in the cost of money because of the tax-free nature of municipal bonds. All in all, the effect of utilizing government credit and the freedom from taxes makes the government yardstick by which our operations are being judged about a foot short.

In other words, if a rate of 3 cents a kilowatt-hour were proper for investor-owned electricity, then the comparable rate—all other things being equal for government power—would be about 2 cents per kilowatt-hour, the difference being due to freedom from

taxes and the ability to lean on government credit. This relationship is borne out by an extensive study of TVA operations made by the staff of EEI. This study indicates that, after making suitable adjustments so as to equate TVA and the municipalities which it serves to an investor-owned power system, it would be necessary to increase the TVA rates by some 46 percent, which would put them on a par with those of investor-owned companies in the area.

A Remarkable Growth Record

In spite of the handicap of having to compete with subsidized government power, the investor-owned utility industry has had a remarkable record of growth. Through good times and bad, new uses for electricity in the home, in our commercial establishments, and in industry have resulted in new sales records year after year. It is now one of America's largest industries with assets of over $50 billion, and an annual rate of expenditure for new equipment and facilities for supplying service amounting to about 3½ billion. This represents about 10 percent of all business capital expenditures.

Load forecasts indicate that it is reasonable to expect our loads to continue to grow throughout the 1960's at the historic rate which means doubling every 10 years. If these forecasts are to be realized, we have much work to do in a number of different categories. We not only need to aim for the future—we must arm for it.

One of the most important categories we are working in is that of power pooling. Lately, in industry meetings and elsewhere, we have heard a great deal about the extension of pooling, but it is not a new idea by any means. Only the publicity is new.

As I have pointed out on several occasions, the growth in our loads has served to spur important technological advances which have resulted in greater efficiency of generation due to the use of higher temperatures and pressures in conventional thermal plants. The availability of larger units has also helped to hold down both initial capital costs and operating costs. In spite of the very sharp increases in labor costs which have occurred since the war, the operating costs per kilowatt of installed capacity in our newer plants are lower than ever before.

Interconnection and Pooling

In order to take advantage of these technological developments, which are contributing significantly toward holding down costs, we have had to find ways of enlarging our integrated operating areas. During the first half of this century, the growth of service areas came about very largely through the acquisition of one corporate entity by another, usually by the merger route or by outright purchase.

In recent years, however, the pattern has changed, and the most practical answer seems to be to work with our neighbors to set up a logical, interconnected, integrated operating area of sufficient size to permit realizing optimum results. This means that, at least with respect to generation and transmission, the system should be planned, built, and operated without regard to corporate boundaries, and in many instances without regard to political and geographic boundaries as well.

While I am convinced that power pooling is the soundest answer to our growth problems and that we must continue to enlarge our pooling areas in the years ahead in order to take advantage of the potential economies, I don't want to give the impression that power pooling is easy. Getting along with your neighbors all the time is never an easy undertaking. Power pooling, however, means that we must make very important decisions involving millions of dollars on a mutually satisfactory basis. For a lot of us who are used to giving orders and having them carried out, effective power pooling has meant a change in our own personal philosophy.

In this connection it might be helpful to draw a parallel between our industry's promotion of power pooling and the efforts of the United Nations to promote better understanding and better working relationships between the nations of the world. Many students of government and many intelligent citizens feel that there will be no real and stable peace until we have learned to accept the idea of world government under world law. The pragmatists, however, say that we are still a long way from giving up our national sovereignty, which is an essential feature to the establishment of a successful world government. In the meantime, therefore, it is essential for us to somehow see to it that the United Nations is successful in keeping the world situation under reasonable control.

Fetish to Many

To many of the career employees in the various branches of our government, government ownership and operation of this country's electric power system is a fetish and they never lose an opportunity to push in that direction. None of them will publicly state that complete government ownership and operation of all electric power facilities would be the best thing for this country. Most of their public utterances profess the belief that there is room for both government and investor-owned companies in the power business. But all of their efforts are directed toward promoting and expanding the area of government power operations.

I refer anyone who questions this statement to the article on the front page of *The Wall Street Journal* for Thursday, May 25, 1961, under the heading "Power Switch," by Daniel M. Burnham. In this article Mr. Burnham describes the elaborate plans of the Interior Department which, if carried out, would constitute the highway to complete nationalization of our industry.

These plans sound very much like the ideas expressed by Stephen Raushenbush in the Socialist paper, *The New Leader*, for March 5 and 12, 1927, in which he explained the concept of the giant power system that would lead to government control of the power industry, and eventually to all essential industries.

Quote by Raushenbush

Here are a few of his statements which seem to be pertinent to this discussion. The title of his article in the March 12 issue of *The New Leader* is, "A Program of Gradual Socialization of Industry." Speaking of the power industry, he says:

"Here is an industry in which 8 billion dollars are invested already and another billion is added every two years. We have made three attempts at control. We have set up municipal plants. Their status is changing and we should face that fact. Outside of the large cities they can no longer compete in rates and efficiency with the new plants being established by companies having the benefit of the connected load of wide interconnection. That many small municipal plants are selling out to private industry is no unfavorable criticism of the efficiency of public ownership. The technical changes in the industry have made isolated plants built years ago less efficient. We have tried regulation by state commissions. It has gotten out of hand. . .

"A fourth attempt which I look upon as much more hopeful is the one which seeks to set up through government ownership at Muscle Shoals, at Boulder Dam, and on the St. Lawrence yardsticks by which the efficiency of private ownership under regulation may be measured . . .

"We cannot hope to take over the whole 8 billion dollar industry successfully, even if it were generally thought advisable to do so at the moment. . . But a scattered series of great generating plants selling their power within 300-mile radiuses might be expected to have a very considerable influence upon the extension of public ownership to the transmission lines and the whole industry. . .

"Our long-time aim is the abolition of the profit system for private use. Our strategy is to make and take every opportunity to prove that it works. We must force our experts on agriculture, trusts, coal, power, subways, housing, milk, etc., to tell us correctly which the next steps are, and then take them and identify ourselves with their success."

These views of Stephen Raushenbush and others were being promulgated and publicly discussed from 35 to 40 years ago—long before the advent of the New Deal or TVA. I suspect that Mr. Raushenbush is disappointed that his objectives have not been realized long since, but I am sure he is encouraged by the goings-on in the Interior Department today.

Financing Expansion

Another category which is going to need a great deal of attention during the Sixties is financing the continuous expansion of our industry. In the first place, we need to make sure that our present shareholders maintain their confidence in future prosperity of our industry. We also need to be ever on the alert to attract new members. Many of our more progressive companies have developed impressive programs designed to keep shareholders better informd so as to maintain their continued interest.

With the expansion of the power-pooling concept there are going to be many new problems to be faced in the financing of various sizes and shapes of joint undertakings. We have had some experiences in that direction in New England in the setting up and implementing of the Yankee Atomic Electric Co., which is owned by 10 of our New England companies in varying percentages, ranging from a maximum of 30 percent, down to a little less than 5 percent each. I suspect that there will be problems which will involve the state legislatures, regulatory bodies, investment bankers, as well as our own staffs, in new and unique situations which can only be resolved by the exercise of patience, intelligence, and ingenuity. This phase of our future operations poses perhaps a greater challenge than the technical and engineering problems.

Factors in the Future

I am sure that we will find no lack of things to keep us busy in the future. There is no sign that the cold war on the government-power front is going to let up. The job of educating our customers, and the public in general, on what makes our industry tick—in fact, how our whole economic system functions—is a continuing one. The existence of the Live Better Electrically program is recognition that we must continue an aggressive selling policy if we hope to obtain our growth objectives.

The establishment of the new EEI Research Division and the fine support it has received from the member companies of EEI indicate that we are not going to be complacent as an industry, but instead will be alert to the possibilities of the new developments which are in the offing—particularly in the area of new means of direct conversion of heat energy to electricity.

Just one more point—with all this work to be done, let's not forget the job which is continually with us of developing manpower capable of carrying on in the years ahead. I am sure the top executives of the industry realize that most of the work of the future will have to be carried out not by us, but by others in our organizations who need our help now in order to reach their full potential later on. To meet the challenge of the future, our companies will need the best talent we can find—for meeting the challenge of the future will require the best efforts, ideas, and techniques that that talent can provide.

Today, we are aiming at the targets of tomorrow. Talent, focused by competition and acting under regulation, can find the way to reach those targets—and set new ones of its own.

Edison Award Won by Pennsylvania Electric

PENNSYLVANIA Electric Co. was presented at the Institute's 29th Annual Convention the electric utility industry's highest honor, The Edison Award, "for developing the engineering concept and pioneering in the design and actual construction of America's first 460-kv (460,000-volt) transmission line operating as a major component of an integrated power network."

To Operate at 500,000 Volts

The new line is equipped to operate at 500,000 volts, and has already operated above this level.

The Award was presented to L. H. Roddis, Jr., President of Pennsylvania Electric, by Sherman R. Knapp, EEI President, at the close of the Convention.

Pennsylvania Electric was cited by the judges "for developing the engineering concept and pioneering in the design and actual construction of America's first 460-kv transmission line operating as a major component of an integrated power network, thus enlarging importantly the effective scope and area for the economical movement of energy electrically—all accomplished within a period of approximately one year—and representing a full-scale prototype from which to obtain reliable cost data and practical operating experience for the benefit of the entire electric utility industry."

The first operational 460-kv transmission line in the United States was energized Sept. 30, 1960, between two major substations of Pennsylvania Electric in south central Pennsylvania. Primarily designed to obtain actual cost experience in construction, operation and maintenance of an extra-high-voltage circuit in an integrated network, and to provide factual data for determining a desirable voltage level for the bulk transmission of power, the 13-mile-long line is part of General Public Utilities Co.'s "Kilowatt Turnpike," which extends from Lake Erie to the Atlantic Ocean. Pennsylvania Electric is an integrated power company operating as a part of the GPU system.

The GPU system in turn operates as an integral part of the Pennsylvania-New Jersey-Maryland Interconnection. Thirteen investor-owned electric utility operating companies participate in this regional power pool, with a total generating capability at the end of 1960 of 14,850,000 kw.

Sherman R. Knapp, left, President of EEI, presented The Edison Award—the industry's highest honor—to L. H. Roddis, Jr., President of Pennsylvania Electric Co., at EEI's 29th Annual Convention in New York. In the center is A. F. Tegen, President of General Public Utilities Corp. Pennsylvania Electric is an integrated power company operating as part of General Public Utilities.

In connection with the Award presentation, Mr. Knapp noted that the nation's electric utility companies for many years have been developing great power pools through which they can interconnect their systems and coordinate their operations to meet combined load requirements most efficiently.

"The development of the Pennsylvania-New Jersey-Maryland pool began 37 years ago. Its growth, like that of other pools throughout the nation, is continuing, as electric companies develop their systems to meet anticipated power needs—and to do so in ways which are most beneficial to their customers," Mr. Knapp said. He pointed out that almost all the electric-power-producing capability in this country is now interconnected, with more than 20,000 miles of the transmission lines being of extra-high-voltage—230,000 volts and above.

Pennsylvania Electric was selected for The Edison Award through a sequence of nominations by a panel representing every section of the nation, analysis of accomplishments of the nominated companies by a review committee, and a decision by a committee of judges. Judges were Dr. J. D. Ryder, Dean of Engineering, Michigan State University; C. W. Kellogg, past President of EEI; and Mr. Knapp.

The Edison Award is given annually to an electric company "for distinguished contribution to the development of the electric light and power industry for the convenience of the public and the benefit of all."

Consisting of a gold medal for the winning company, and $1,000 for the company's employees' benefit fund, the Award has acquired national prominence in the public mind, as well as in the electric industry, for its significance in recognizing conscientious service and progressive development.

The presentation to Pennsylvania Electric represents the third time The Edison Award has been given. It was presented for the first time in 1959, taking the place of the Charles A. Coffin Award, which was given annually from 1923 through 1958 in recognition of outstanding achievement in the industry.

The Political and Economic Climate Ahead

By Dr. E. P. Schmidt
Director, Economic Research Department, Chamber of Commerce of the United States

ALTHOUGH our exports or our imports amount to less than 5 percent of our Gross National Product and we are one of the more self-sufficient nations, we have been maneuvered into a position under which foreign affairs and our international entanglements now dominate and will continue to dominate our domestic political and economic climate. Our international position is weaker and far more dangerous than is commonly assumed. Nor have we been blessed with unusually high-quality domestic statesmanship.

Any discussion of the political and economic climate ahead must be concerned with both domestic and foreign factors.

Even if one were to conclude that the political and economic climate is deteriorating and degenerating, the disease may not be fatal. Such pessimism need not lead to despair for at least two good reasons:

- Trends rarely persist in one direction indefinitely; they may plateau or even reverse.
- In some cases, conscious action of a smart and intelligent nature on the part of those opposing current forces may cause trends to pause or even change direction, although in international affairs we have reached a near-impasse.

Public Policy Criteria

If one is determined to alter trends or to improve the political and economic climate, it is important to have basic bench marks, criteria or anchors by means of which to test *both* general and specific trends and current policy recommendations. The authors of the Declaration of Independence, of the Constitution, and of the Bill of Rights had clear-cut ideas of what they wanted—they were not confused and bemused as are most of us today. In the absence of some such general but precise principles—some basic goals and methods—every new idea, whether put forward by a politician, union official or socio-political experimenter, fails to fall into place in an orderly fashion. Then confusion takes over and divided counsel prevails.

As a specific example, recently our Committee on Economic Policy, wrestling with the problem of our targets, developed a report on "The Goals of Economic Policy," and was able to reduce these economic goals to five in number: economic freedom; over-all economic efficiency; economic growth; economic stability; economic security.

This comes to the opposite conclusions on key matters with former President Eisenhower's national commission on goals. It draws the line between "public" goals and government goals. These five goals embrace all economic goals; they may re-enforce one another, but to some extent they are in conflict. On controversial issues, a thorough grasp of these five goals, their harmony and their conflict, may lead to an improved resolution of differences and an improved political and economic climate. Without some such anchors, confusion prevails and a cohesive and well-directed aggressive minority makes policy. The politican, long on promises and always adept at looking at only one or at most two goals at a time, can make himself out to be a hero, even though in the process he is weakening our society and deteriorating our international position.

Besides economic goals we also have other, non-economic goals, such as national security; government may be useful in attaining that goal and others.

But government is potentially dangerous because it has the power to tax (wring from the citizen involuntary contributions) and it has a monopoly of the use of force (it *should* have such a monopoly.)

Concentration of power is the great threat to freedom. Where human freedom has failed, government has become the tyrant. The great enemy of mankind is overly concentrated government, a lesson which is being lost here and never learned in many, if not most, parts of the world. The purpose of a *written* constitution with a bill of individual rights is to reduce the

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, June 5, 1961.

dangers of what is now gripping the entire planet.

For this reason we need to have firmly in mind the proper structure, nature and function of government. We need strong but limited government.

One-Third of Income

Governments now absorb about one-third of our income. Government finance now rests on such a multitude of levies and so much upon *indirect* taxation (excises, payroll, corporate and withheld personal income taxes) that the taxpayer hasn't the vaguest idea of what he is paying (nor does the average taxpayer concern himself). This makes it easy to get public support (or even just public apathy—which is just as good from the politicians' viewpoint) for new spending programs and intervention, regardless of their merits. The alleged unmet government needs in our society would easily add up to the other two-thirds of our income. By 1970, governments will absorb over 40 percent of our income unless we develop a firm concept of *limited* government and evolve articulate support for this view. The political and economic climate of business will pass through much travail in the interim. Authoritarian government (with wage, price, investment and personal spending control) is not to be ruled out.

The major functions of government should be the protection of individual freedom both from foreign and domestic enemies, to preserve law and order, to protect property and help to foster competition and economic stability through a sound credit and money policy. If government did these few things and did them well (and wasn't overloaded with side and minor issues), we would be far better off than we are by having government intervene on countless fronts as it now does. Our central government has lost all sense of the distinction between nation-wide problems (fire control, juvenile delinquency, etc.) and truly national problems which can only be handled by the central government.

Beyond these basic functions, government may at times enable us to accomplish jointly things *which need doing* but which we cannot do through the free market or voluntary private effort. But any such enlargement of government functions is potentially fraught with danger. We should not depart from the basic function of government unless there is a clear and undoubted informed consensus for doing so. By leaving the great bulk of activities to private effort and voluntary cooperation, we can then be certain that the private sectors of our society will act as a check on the powers of government and provide an effective guarantee of freedom of speech, religion and thought—goals of political freedom which are, or should be, superior, even to economic freedom, even though many people in Asia, Eastern Europe and elsewhere have learned the hard way (and too late) that economic freedom (private property, occupational choice, consumer choice, investor choice, etc.) is an essential and indispensable counterpart of this larger personal freedom.

If we are to have a sound political and economic climate, the next broad anchor is that government power should be dispersed and diffused. Suitable checks and balances should be built-in: a bicameral legislature, constitutional limits on the power of any one body, a judiciary which interprets the Constitution instead of catering, infant-like, to the whims of politicians and an executive who has some independence in suggesting and retarding legislation.

Furthermore, if government must exercise additional compulsory power, it is better that it be near at hand at the local community level than at the county level, better in the county than the state, better by the state than in Washington. If you do not like what your local community does, you can move to another community; even though few citizens will take this step, the mere possibility acts as a check on arbitrary government. If your community or state offends, you can move to another. If Washington offends you, you have no really open alternative. Thus, if we are to preserve freedom and improve the political and economic climate, the need for dispersing the power of government is obvious and this point has been well set forth by Felix Morley in his book, *Freedom and Federalism*. Under this approach mistakes will be small, major catastrophes will be minimized and more readily reversible.

Those who want bigger government which will do more for the people (or who want to earn credits in a popularity contest) have, of course, a strong argument for by-passing local and state government—a single law at the national level is easier to put through and enforce than to deal with a myriad of state and local governments. Such a uniform, monolithic approach, however, is wasteful and arbitrary, particularly in a large country with greatly divergent conditions and situations. This argument for centralized government power has two sides: the power and authority to "do good" is also the power to do harm. What seems good to you, furthermore, may be evil to your neighbor. Those who wield the power and authority today may be replaced with scoundrels, or worse scoundrels, tomorrow. The great tragedy of the pell-mell drive, here and abroad, toward the centralization of power is that it is so often led by men of goodwill, but who do not know what good is, and who will be the first to denounce its consequences, once they are on the outside looking in—if they survive.

A Legitimate Objection

One basic and legitimate objection to undue bigness—whether in business, labor unions or agriculture—is its power to coerce, to compel or even threaten, by virtue of its bigness and power, the economic and other freedoms of the citizen. By government becoming unduly big, the dangers are multiplied. The government has the power of coercion. But perhaps even more importantly, by subtle, indirect and devious ways, the government as a big buyer, hirer and seller, money lender and possessing the power to make money

grants, can subdue thought, expression and criticism. You do not bite the hand that feeds you.

The Power of Government

Many companies today find the government to be such an important customer that their officers are subdued into speech-paralysis on key issues affecting the future of our country. Government doesn't have to act or even threaten; its power to damage the enterprise is so great that the mere existence of the power is enough! You just don't offend a good customer.

Once the national government becomes the important source of teachers' salaries, teachers will have to be cautious both in discussing educational questions and other public issues, whereas under local finance any teacher put upon can move over to the next county or city. The Hatch Act will cover more and more people, making them political eunuchs.

Today the national government is the *biggest* in endless lines—the biggest employer, landlord, landowner, forest owner, grazing landowner, mineral deposit owner; the biggest tenant, debtor, lender, warehouser, auto-fleet operator, publisher, insurance writer, grain owner and storer, power producer; the biggest single buyer of innumerable items; the biggest producer and controller of statistics (a basis of our economic intelligence), biggest mass opinion-maker, biggest deficit operator, biggest depositor in banks, biggest issuer of securities—the list is endless.

Furthermore, government, considering its relative size, is our fastest growing industry. It will dominate (if not dictate) our lives for as far as we can see into the future—unless informed opinion takes stock of the situation and is able to cause a halt. This all has profound implications for the future of our political and economic climate and our personal freedom.

Many of these activities (plus the effect of controls and intervention) of government compete unfairly with the private effort of the citizen trying to make a living and make the private market work less well, rather than better. Much of this intervention and competition is tainted with immoral and unethical practices or at least with such overtones.

The Post Office, for example, not only accounts for one-half of the rise in the public debt since 1946, but the deficits would have been much larger had the postal service paid property taxes on its assets, charged depreciation on its depreciable assets and paid for services rendered to it by other government divisions. Thus the real economic costs are falsified by the accounts and statistics.

Much the same would be said of Federal power projects. Accounting methods and investment-base allocations hide the facts from the public. A senator from the Tennessee River Valley in a speech to a Washington area audience told his listeners that the test of the fairness of their electric rates would be the TVA rates. Either he was ignorant of TVA's subsidies and the accounting and statistical facts or he merely traded on the ignorance of his listeners. The Federal Power Commission and the Internal Revenue Service, furthermore, deprive the tax-paying investor-owned utilities of charging as part of their operating costs the expenses involved in setting forth the facts as they see them—another important liberty which has been lost, not to mention the basic question of freedom of speech and of the press.

Even though the average revenue per kilowatt-hour for residential use has dropped from about 3.8 cents in 1940 to under 2.5 cents in 1960 (while the Consumer's Price Index of the BLS has more than doubled), the electric power industry and its suppliers have political and economic climate problems. Now the anti-trust division of the Department of Justice has announced (according to the *Wall Street Journal*, May 24, page 1) that it wants competition among your suppliers, but not too vigorous competition! One day later the same paper reported that the Department of the Interior now intends to invade the territory of private tax-paying utilities, a weird way to stimulate private investment and economic growth!

By turning economic affairs over to Congress and Federal bureaus, these affairs are not suddenly embraced by paragons of wisdom or virtue in Washington.

Look at such a basic matter as the integrity of the dollar, a peculiarly constitutional government responsibility. People have been encouraged to save and invest in insurance, in mortgages and in government bonds. Since the beginning of World War II, the buying power of the dollar has been cut away by more than half. Government proudly boasts of its bank deposit insurance program, but it never warns the depositor—not even in the fine print—that the dollars deposited may be eroded by loose fiscal and monetary power. What is the moral difference between a bank robber who takes half your money and public policies which leave you with only half of your purchasing power?

What of the wisdom or ethics of the government policies perpetuating agricultural programs which encourage fabulous misallocation of human and other resources, lead to higher prices for the housewife and force the general taxpayer to transfer tax dollars to the farmers via the U. S. Treasury, under the guise of helping the farm poor, *when as a matter of fact* the farm programs damage *them* more than they help them? What kind of economics would advise a compulsory rise in the legal minimum wage at a time when unemployment is a worry? Why should administration spokesmen concerned with inadequate economic growth urge an Old Age Survivors Insurance premium on retirement of men at age 62?

Tragic Inconsistencies

The gross inconsistencies in the economic or political economy philosophy and its egregious contradictions of the current administration (and the Congress) based clearly on its own stated goals and objectives are tragic and if they continue can lead to dire consequence, at home and abroad. You don't need to take my word for this. Here's what Erwin D. Canham, editor of

the *Christian Science Monitor*, said in an address in Chicago (*Sun-Times*, Chicago, May 20, 1961):

"I do not believe there will be an adequate forward movement of the American economy unless there is a great improvement in what is generally called the business climate.

"Business decision will ultimately determine whether or not we are to move ahead fast enough to discharge our responsibilities and strengthen our role in the free world.

"I do not believe the Kennedy Administration and its advisers have fully understood the importance of these business decisions and the urgent necessity of encouraging them in the forward direction.

"The economic growth we so badly need will not come through social and economic relief measures such as have been primarily presented to Congress this year, nor continuation of the close alliance with labor, nor through piling up of an unbalanced budget, nor through such delusive measures as the tax revisions presented to Congress.

"Economic growth will come, in large part at least, when business has the incentive and ability to save and risk capital in the kind of investment which produces growth."

Eisenhower Administration Chafed

The Eisenhower Administration long chafed under the 1918, 4¼ percent Congressional price-fixing interest rate ceiling on public debt securities; it refused, deviously, to get around the control, when money markets became tight, by selling the securities at a discount. But the Attorney General last April ruled that such a devious way around the will of Congress is legal—go ahead as needed! (*Time*, May 5, 1961, page 79)

Government intervention in strike issues is likely to increase. Government intervention, or the intrusion of third-party arbitrators and recommenders of settlement, is virtually always against the consumer (as shown in *Economic Intelligence*, Chamber of Commerce of the USA, February, 1961).

Thus, in one area after another where government has intervened it has brought failure, chaos and inferior moral standards.

Turning more responsibility and decision-making away from the individual and private control and into government hands is said to give us wiser decisions, more ethical practices and a better life for all. This is a great myth; most people seem to be too bemused or too scared to challenge it.

This does *not* imply that private individuals or businesses are above reproach; when they violate economic law and use resources wastefully, the consumer marks them for liquidation. Government activities never have to meet the test of the market. When private business violates statutory law, it should be tried, suffer the penalty when found guilty under due process of law.

The strength and virility of our society depends fundamentally on the character of our people and productivity of our private economic system. Instead of whittling away private decision-making and strangulating private effort, our public policies should encourage more effort, more innovation and more enterprise, relying on competition to pass the gains of productivity on to the people. (How this works in practice is explained in the Appendix of our *Productivity and Wage Settlements*, 50 cents per copy.)

International Relations

In international relations our record and plight have reached a new and frightfully dangerous low. The new administration promised much and delivered worse than nothing—although one should hasten to add that it inherited a mess from the previous administrations going back more than 20 years, or at least back to the Yalta agreements of 1945.

With a rising Africa, ripe to fall into the Communist sweep, our domestic desegregation and integration policies could not have been better timed or designed to alienate nearly all of black Africa.

Instead of encouraging voluntary desegregation and voluntary integration at the state and local levels, government stupidly has made these national and international problems and placed a liability upon us from which we will not recover for 100 years, if then.

The more the national government forces the issue, the more talking points it is likely to provide to Moscow, Peiping and to the countries of Africa and to peoples in lands which we had counted upon as reasonably dependable allies. Central and South America ought to be our first concern, not the Congo, Iran, Laos or South Korea. Our first duty is to keep our own house in order; next we should be concerned with the nearest neighbors. The damage has been done. There is now no facile solution or even resolution to the problem.

After World War II we went emotionally all-out internationalist, having found that our policies of non-foreign entanglements after World War I did not yield the best results. But now we have made military and economic commitments vastly beyond our capacity to deliver—the reverse being the very heart of a sound and viable foreign policy. We have raised the expectations of foreigners and foreign nations which are certain to remain unfulfilled. The administration, in a process of incompetent self-delusion, is continuing to raise them.

Big, Rich and Envied

Because we are rich, big and strutting, we are the envy—and, therefore, the hated of the world—almost without exception.

In international relations there are no friendships; there are only interests. Even Bismarck, nearly 100 years ago, said that the word "gratitude" is not found in the international vocabulary. This our leaders for more than a generation did not know or understand, and most of them still don't know it. George Washington understood it.

That the world is in a revolutionary ferment is in need of no documentation. Outside of most of the English-speaking countries and most of Western Europe,

authoritarian and totalitarian (there is a difference) governments prevail and will prevail. Considering the conflict between political promises, plus rising expectations and ability to deliver, such anti-parliamentary rule (anti-representative or republican government) is likely to continue so far as one can see ahead. Dictatorship sometimes of the Right or the military, but mostly of the Left (or in the name of the Left), with shifts from pole to pole, will dominate in countries with some 90 percent of the planet's population. But our policy makers seem incapable of distinguishing between those dictatorships which are a direct and imminent threat to us and those which are not.

Big Movements Must Burn Out

Once these powerful, popular, socio-political-economic movements get under way in a massive form, there is little or nothing that can be done to stop them—they have to burn themselves out. This takes not years, but decades, and probably generations. None of us likes this. It is not a pleasant conclusion, but it seems to be the most probable conclusion for most of the planet. Our government and opinion leaders who helped break up the colonial empires during and after World War II didn't have the insight to understand that when established institutions, methods and rule are displaced, the vacuums will fill up.

Robert Ruark, in his best-selling *Something of Value*, used this Basuto (African tribe) proverb:

> "If a man does away with his traditional way of living and throws away his good customs, he had better first make certain that he has something of value to replace them."

If people are not dedicated to the concepts of the dignity of man, the rule of law, limited government and constitutional stability—values and institutions which we inherited from the English—dictatorship is inevitable. If people do not understand the key importance of the philosophy of limited government and the dispersal and diffusion of power, and then blindly merge political and economic power (property, investment, production, employment, etc.) into the same and a single government control (that is, create collectivism), society is destined for a loss of human freedom and for authoritarian rule.

Government in the United States is being led down this same road, chiefly by politicians and their henchmen (in government and outside) who are in competition with one another for public office and the emoluments thereof. Our commitments throughout the world, far in excess of our capacity to deliver, will make for bigger and bigger government. The tax burden will grow and grow—unless . . . The new administration has acquired men of high IQ and educational attainments, but common sense and wisdom are not comparable as a whole.

Trends do have a way of pausing and reversing themselves. At times (only at times) is it possible by conscious, well-planned action to slow down or even reverse a trend. Are the responsible and wise individuals in our country going to allow the country to be ruined and our freedom destroyed? The solutions are not obvious. Will they take the time and effort to establish the necessary seminars, study groups and self-assessment steps and facilities to diagnose the problem and then (only then) tailor the necessary counteractions for the disease?

A people gets the type of leadership it deserves. The USA helped to enthrone Fidel Castro. Much of the press, particularly the "liberal" press, embraced him with excited emotional exuberance. Ed Sullivan on CBS and Jack Paar on NBC brought him to their TV viewers in a context which raised Castro to the level of a saviour, a demi-god; when "show biz" people get into the occupation of shaping international relations or policy, it is high time that we raise the right questions. It is no accident that the anti-Castro Cubans picketed the premises in May of 1961 of a N. Y. daily newspaper.

The rise of the intelligent, articulate conservative (not reactionary) movements as Young Americans for Freedom on many college campuses, a growing conservative literature (both magazine and books), the development by the Chamber of Commerce of the USA of economic understanding courses and of courses in practical politics—all these as examples are hopeful signs. But the primary purpose of all these movements should be individual self-improvement. We need not less, but more "talking to ourselves." If you or I cannot in private conversation or on the platform win the argument for human freedom, free men, the free market and the philosophy of limited government with an effective diffusion of power—then you and I need self-education.

Fight for Freedom Begins at Home

Just as any journey begins with a single step, so the fight for freedom must begin with you, with me—for once we become well-informed, articulate and persuasive spokesmen we will become the centers of influence. The most competent golfer, the most eloquent clergyman or the most gifted actor (without fanfare or conscious publicity) may naturally draw observers to himself *who are interested in their own self-improvement.* These uncommon men possess influence by virtue of their excellence. Self-improvement is your and my most important duty. Once this is more broadly understood, the adverse tide may weaken and turn, and then our values need not go down the drain. Then our political and economic climate will improve.

Must proponents of political and economic liberty, human liberty and diffused power be vanquished in open debate? If so (which we doubt), either:

(1) The basic principles of freedom are logically inconsistent or ethically indefensible.

(2) They are correct, but so difficult and so subtle that they cannot be made persuasively in open debate.

(3) Or, they are defended badly by devotees of freedom.

Anyone familiar with the writings of John Locke, Adam Smith, Edmund Burke, John Stuart Mill, Lord

(Continued on page 201)

Your Public—a Promise or a Paradox

By Andrew Heiskell
Chairman of the Board, Time, Inc.

I FEEL that I am somewhat in the role of a character witness from the public. In that role, it is incumbent on me to tell the whole truth about what I think is good and what I think is bad about the industry. So let me start with what is good.

Salute to a Great Industry

I would like first of all to offer my personal salute to a great industry and its great accomplishments. History shows us fairly conclusively that a civilization grows in quite direct proportion to the amount of energy that is available to the people. The remarkable growth of American civilization is no exception. At the time of the Revolutionary War, *Life* reported some six years ago, every American had 126,000 Btu of energy at his disposal each year, in addition to his own muscle power. By 1953, he had 250 million Btu working for him, a staggering 2000-fold increase. And I would guess that there has been another increase since that time of well over 50 percent, since the generating capacity of the electric industry has more than doubled in the last 10 years.

To me, this is a remarkable achievement—all the more so when I realize that while we have been straining for a growth rate in our economy of 4 percent, and 5 percent seems to be an unattainable ideal, the growth of electric energy since the war has averaged 8.6 percent a year.

Now, these are not, like some numbers, just abstractions. In a very real sense, they are the measure of how drudgery has been eliminated from our lives. Electric power has become the docile servant that lights, that warms, that cools our homes and our places of work, that washes our dishes and clothing, that drives our elevators, and that bakes our cakes.

Even more important than its own growth has been the growth that the electrical industry has stimulated and made possible in every other industry, from the manufacture of aluminum to special kinds of steel furnaces to running huge presses to print magazines.

All this has taken place in less than 80 years since Tom Edison's Pearl Street generating station went into operation in New York City. Edison put in $40,000 of his own money and raised $300,000 in venture capital to build that plant. Ever since, private capital has provided for the bulk of the industry's requirements. Private investment in electric producing plant and equipment has increased even faster than the industry's output, having doubled in about seven years.

The faith of the investing public and of other sources of capital is demonstrated in their willingness to keep investing in the electric power industry at a rate that is far higher than our rate of national economic growth. The justification of that faith is the record of the industry itself. It has done a consistent and noteworthy job of selling its product, not just in increasing the use of electricity by consumers, but also in actively sponsoring new ways to use electric power constructively.

Promise Is Great

Now, the electrical industry is still young, as industries go. And today it is on the threshold of its greatest period of growth, and its promise is greater than it has ever been.

In a talk at the Westinghouse Future Power Forum in 1959, my colleague, Roy Larsen, said:

> "There are people in and around Wall Street who like to speak of certain businesses as romance industries. In this age of rapidly developing technologies, most romance industries retain that romantic incandescence for about ten or fifteen years, and then become old hat as they are superseded by newer and even more glamorous industries. Not so the electrical business. It became a romance industry not long after Mr. Edison made a filament glow in a glass

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, June 5, 1961.

tube, and it has somehow managed to hold on to the glamor franchise ever since.

"Today, I am sure, the industry is looking forward to an even greater and more promising future. There is the smell of tomorrow in the things it is dealing with—atomic power plants, nuclear reactors and particle accelerators, guidance systems, computers, automatic controls, indoor climate control."

Since Mr. Larsen made that statement, some of the tomorrow has arrived. The total investment of the investor-owned power industry in nuclear power plant construction is more than $650 million, in addition to investments in a number of nuclear research, development, and study projects.

How Is Growth?

And how is the industry doing as far as growth is concerned? At the end of 1959, more than 98 percent of occupied homes, urban and rural, were connected for electrical service. So there wouldn't seem to be much room for growth there.

Nevertheless, by 1980 when the number of households in this country is expected to be 34 percent greater, the producing capability of investor-owned power companies is expected to increase by 300 percent, and the energy produced will be measured not in the billions, but in the trillions of kilowatt-hours.

These figures are not just fantastic, but they surpass all understanding—at least my understanding. I'm not even sure I understand what a kilowatt is, let alone a million of them.

But the electric power industry is no longer so young that it is unaware of its great responsibilities. Quite on the contrary, it is responsible, responsive, innovating and strong.

The investor-owned power industry is responsive to the public interest in many ways. The steady decline in rates charged for electricity is one. Another is its awareness that while it can function most efficiently as a monopoly, it needs to be subject to government regulation. It seems to me that it has worked out a fine spirit of cooperation with regulatory bodies, because I almost never hear of any major debates between companies and rate-setting commissions.

When an industry is meeting the public's needs, cutting its prices, growing and actively planning its future growth, that would seem to me to satisfy the definition of a strong and vital industry.

You would think that the nation, and especially the national leaders, would be proud of such an industry. You would think that political leaders would bend over backwards to permit such an industry to move ahead on the course it had set for itself. When you think of all the industries that are sick, that need tariff protection and subsidies, that require the nursemaid's hand of government to keep them going, you would think that the Federal government would point to the electric power industry as a shining example of good business practices.

So what does happen? Why, the government merely tries to compete with shareholder-owned power companies.

Let us look briefly at what is happening in government today, in relation to the power industry. In his special message on natural resources in February, President Kennedy made the administration's position very clear when he said:

"To keep pace with the growth of our economy and national defense requirements, expansion of this nation's power facilities will require intensive effort by all segments of our power industry. Through 1980, according to present estimates of the Federal Power Commission, total installed capacity should triple if we are to meet our nation's need for essential economic growth. Sustained heavy expansion by all power suppliers—public, cooperative and private—is clearly needed."

Since the industry's own estimates are for nearly quadrupling present national capacity by itself by 1980, it would appear that any further government moves into power production would mean a curtailment of the industry's projections. But that is not really so. The shareholder-owned power industry, in effect, has said "Welcome" to government projects, where power was an incidental by-product to such other objectives as flood control and irrigation. What the investor-owned power industry has asked is that it be permitted to transmit the power so produced. In the light of the fact that this would avoid duplication of power lines, that strikes me as a reasonable request.

But current Federal policy is definitely not limited to power production. As all of you know very well, the crux of the present controversy is that government has every intention of getting into the transmission of electric power as well.

The outstanding case in point at the moment is the Colorado River Storage Project. The last official act of the Interior Department in the last administration was a recommendation that the government build its own transmission lines. As might be expected, the department's position was reaffirmed by the present administration.

What Federal Power Is Doing

What else is going on in the area of Federal power? For one thing, a five-man task force, headed by Bonneville Power Administrator Charles F. Luce, is looking into the feasibility of tying together the Northwest Federal power grid with California. The specific question is whether to construct an extra-high-voltage common carrier line between the Pacific Northwest and the Pacific Southwest.

The main reason for this search is that the Federal power net has glutted its own market, and in the past four years Bonneville's surplus has been cut from $78.8 million to $53 million, and will operate this year at a $13 million deficit. It is estimated that $30 million worth of electric energy will literally run off as water

over the dam, because of inadequate transmission lines to market areas.

Now here is a phenomenon that is not at all uncommon for business, but one that seems very strange for government that has moved into the sphere of business: production has reached the point where new markets must be found to keep it efficient—at the expense of investor-owned industry.

It seems easy to argue that government power production and distribution are basically an expensive proposition. When you add taxes and lobbying costs and a reasonable return on capital and various other costs, government power could well be an unreasonably costly affair.

Costs Not Passed to Customers

The trouble is that these costs never show up on the consumers' electric bills.

That leads me to one inescapable conclusion. Arguments against government power are weakest when they are confined to the areas where the power consumers benefit most. It would seem to me far more effective to tell the Pennsylvania taxpayer that he is being hurt by a Colorado power project than to tell the same story to a Colorado taxpayer for whom the benefits may be greater than the cost.

All of this presupposes a concept of government activity that is very difficult for an opponent of government interference to comprehend. The tendency, instead, is to fight the evil where one sees the evil taking place. The Colorado Storage Project has been fought out in large competing advertising in Denver, but not in Atlanta, Minneapolis or Boston. And yet, from the private power company viewpoint, Atlanta and Minneapolis and Boston are just as much involved.

If there has been an error of judgment here, it is to think of government as a blunt instrument. You ward off the blows of a blunt instrument where you think they're going to land.

But this is not what government is like at all. Government in a democracy is a sensitive tool, and it picks up signals from every corner of our nation, then amplifies the signals it has received into a great swelling chorus of public opinion and reaction.

I realize that your power companies have been working very hard on this very area of public opinion and public understanding. And yet, it seems to me that, in spite of all your efforts, you have barely begun to move. I do not mean to criticize at all the nature and character of your public relations efforts. Those that I have seen have been convincing and effective. But I have gone to some trouble to see them—and most of your public will not. And I get the impression that you are trying to move a mountain with a toy shovel.

Now I am not recommending that you forthwith increase your public relations budget tenfold. The job you have to do is far too difficult to permit any such simple solution.

The first step, it seems to me, is to articulate a clearly-defined sense of purpose for your industry. You must build from a basic premise of what your industry represents, what the nation is and how your own aspirations fit in with those of America. If your sense of conviction is strong enough and stubborn enough, the stage will then be set for communicating it effectively.

But the job you must do goes far beyond skirmishing with Congressional committees, far beyond the kind of rear guard action that at best merely retains your present position. The front lines of your battle are the places where you reach the American public.

In that battle, as you must be aware, it is deeds and action that count for much more than words and argument. In the case of your own industry, the most effective action you can take is in the service you provide for your own customers.

Almost equally effective is the action you can take in those areas where you share common goals with the public—in the communities where your individual companies exist and operate, and in helping America to realize its national purpose.

In the communities your record appears to have been excellent. In most places power companies are good citizens and aware of the responsibilities of citizenship.

This has been a natural development. A power company cannot get up and move its machinery elsewhere, simply because labor is cheaper, water resources more plentiful or the local government more cooperative. It must stay put. And it can only grow in communities that grow.

But the job they have done, it seems to me, has been mainly one of promoting the growth and industrial development of their communities. This is by no means the whole job.

What's Happened to Cities?

No industry, it seems to me, should be more aware than the electric power industry of what has been happening to our cities. As suburbs have mushroomed and metropolitan areas have spread out, the utility companies have had to extend their local power lines to an ever-widening grid, increasing in extent as the square of the distance from the power plants increased. It has had to install new generator and transformer stations farther from the center of the cities.

At the same time, as urban decay has spread in the wake of the cities' expansion, some of the older installations must have become less useful and less efficient.

This is the problem of the cities—to maintain what we have while we build what we need—and it must also be the problem of the power companies. A large part of our increasing local and state tax costs are simply the price of past neglect. Traffic congestion, overcrowded living quarters, decaying buildings, poor schools, air and water pollution—these things can be terribly expensive, and they add up to a decline in the living standards of both our individual citizens and our corporate citizens.

Our cities represent too great an investment to per-

mit current deterioration to become future social and economic deficits. Over the next 10 years, we are planning to spend some $600 billion on all kinds of construction, most of it in and around our cities, compared to an estimated value of all existing construction of only $500 billion. The stockholder-owned power companies will be hurt as much as anyone if a large part of this tremendous investment goes down the drain of urban blight.

A Potent Force

Nationally, the electric power industry can be an equally potent force. I am told that yours may well be the largest industry in America in terms of total investment, because of the heavy capital investment needed for each dollar of sales.

And yet the public has no clear-cut image of what the industry represents, let alone its size and extent. Your own surveys show that the term "private power company" has almost no real meaning for the public, and that the term "public utility" conjures up some startling misimpressions about the nature of your business.

I would like to suggest that, for the moment, your industry is waging a defensive battle. And sometimes, in such warfare, it is much easier to define the enemy. I think that "government power" and "Federal power" are terms that are far more clearly understood.

Now, as one consumer who has recently been exposed in depth to some of the arguments in the private vs. public power controversy, I would like to point out those that made the greatest impression.

I was struck by a combination of two facts, each of which came as something of a surprise to me. One was the existence and operation of "power pools" that cover almost the entire nation, making it virtually possible for reserve capacity at one end of the nation to be used in a power-short community at the other end. The other was the 25 percent reserve capacity figure.

Putting these two together made it hardly conceivable that there could be a shortage of electric power nationally, or that any region might have inadequate electric power for its needs. It struck me, therefore, that new transmission facilities that did not fit into the existing pattern, whether built by government or anyone else, would bring about waste and duplication. I realize that this may be an unsophisticated approach to the electric power problems of the country, but the argument still seemed a convincing one.

It hardly befits me, however, to tell you which arguments to use. You know your business better than I could hope to. My own business happens to be the communication of facts and ideas and, if you are looking for help from me, it must be in that area.

Where your communications appear to have been weakest is with the public—your customers, who can be your harshest critics but are potentially your warmest allies. I think that the American Telephone & Telegraph Co. is an example of an organization that has long showed a deep basic understanding of public relations. While enjoying a near monopoly, it has led from strength and has managed to identify its own interests with the interests of its customers and the public.

Having right on your side, unhappily, is not enough. Even having a fine pool of talent on your side is not enough. Any major effort to reach people has to be done on a major scale. When we think in terms of 175 million people to be reached, we must also think in terms of a budget that can do the job.

I don't think that the $2 million or $2.5 million budget of the Electric Companies Advertising Program is nearly enough. In terms of the job it must do, or of the $11 billion gross annual revenues of the shareholder-owned power companies, it is shamefully little. Any lineman in any one of your companies can tell you that he cannot do his job without the right tools or enough tools. The tools for one typical line crew cost about $18,000. I don't think you can do a proper public information job for the entire United States with the amount of money that it takes to equip about 150 trouble-shooting trucks.

Regardless of how much money is spent, however, your story can be most forceful if it flows logically from your industry's sense of purpose.

Where can such a statement of purpose come from? Well, right here in the Edison Electric Institute you have one of the most effective trade organizations of any industry in the country. It is broadly representative; it can speak for the industry, and it is truly the focal point of your many common interests.

It would be highly presumptuous of me to try to frame a statement of your industry's purpose. But one important element is inescapable, because it is also part of our larger national purpose.

A Stake in Freedom

Your power companies are part of our free enterprise system, and so they share our over-all stake in freedom itself. What does this mean to our citizens? It means they buy and use electricity as a matter of free choice, and the amount that they buy and consume is a matter of free choice.

This is important when we think of Russia, which has only one-fourth as much electric power available to each person, and where only 16 percent of the power produced goes into residential and rural use, compared with 30 percent in this country. It is important when we think of the recent Soviet campaign to get its people to cut down their use of electric power, while we were expending a great amount of effort to find new uses for electric power, to increase the use of electricity, and at the same time to make it more economical. It is important when we realize that Russia is not catching up to us in electric power production, but barely maintaining the same percentage of our much greater output.

Such comparisons, I know, are negative. But they accentuate the positive aspects of our own ideals and beliefs. As long as we set the standards for the world,

we will be able to make only negative comparisons. Our job is to keep setting those standards.

Last week *Life* announced some changes in its format. Publisher C. D. Jackson said that *Life* was strengthening its graphic presentation chiefly because it has increasingly important work to do. He defined *Life's* new tasks as working toward the fulfillment of our national purpose, and it listed our national goals as, first, to win the cold war, and second, to create a better America. These are simply stated goals, it seems to me. But they encompass a world of ideas, and they provide a framework for a decade of action and dedication.

The investor-owned electric power industry, I think, could well adopt such goals as its own. Within their scope, there is plenty of work for all of us and plenty of latitude for you to express your own functions and your own place in our society.

What I am suggesting is that your power industry can not only help us to live better electrically, but also to live better as a free nation in a world that wants very much to be free.

The EEI's Expanded Research Progam

By Willis Gale
Chairman, Commonwealth Edison Co., and
Chairman, EEI Research Division Executive Committee

THE first point I would like to make is that, although EEI's expanded research program fulfills a very important need in the area of applied research, nothing the Institute is doing or plans to do is likely to have an earth-shaking impact on the research front. The funds available to us in 1961 are just under $600,000.

This, although significant, is a very minor part of the total national research effort. According to the National Science Foundation, research and development expenditures in the United States in 1960 totalled some $14 billion, of which the government furnished about 60 percent.

It is hardly necessary for me to point out that most of the research for the electric utility industry is done by the manufacturing companies. Our larger suppliers, General Electric, Westinghouse and Allis-Chalmers, so far as I have been able to discover, do not publish figures for research by itself. I am informed, however, that their expenditures for research and engineering are at least 6 percent of sales. This means that they spent in 1960 on the order of $400 million for research and engineering.

Not all of this amount, of course, is for research, and far from all is spent on equipment for our industry. Nevertheless, electrical apparatus research expenditures by the manufacturers are very large.

Although the investor-owned electric utilities are becoming more and more research-minded each year and, in total, spend a great deal more than the Institute, the basic traditional pattern has remained unchanged.

Most companies are willing to spend a little more money through the Institute. Most companies are stepping up their own programs. Many are involved substantially in atomic projects which, of course, are in the nature of research and development.

Groups of companies within the industry are supporting specific research, such as the work on magneto-hydrodynamics (MHD) by Avco Corp., which is backed in part by American Electric Power and other associated utilities.

Thus, although there is a greatly intensified interest in research, it continues to be my observation that most companies are not desirous of making radical departures from their past practice, so far as EEI is concerned.

What should be the scope of the Institute program?

There is never a complete meeting of minds on any subject. I know there are quite a few different points of view on this one and quite a few shades of opinion

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 6, 1961.

among those who hold a generally similar point of view.

First, there are those who believe that the research program should not have been stepped up at all. These, I assume, are represented by the companies which have elected not to participate in the new program. Fortunately, they represent only 14 percent of the total potential dollars.

I should say, too, that some of these non-participants had special reasons for not going along. One small company felt it could not join in the electric research activities because all of its available money for a purpose like this was being used up in a program to convert from manufactured to natural gas. Another company was suffering from a recent rate reduction and felt that it could not afford to go along at this time.

On the other end of the spectrum, there are those who believe that EEI research should be stepped up even more than we now contemplate. I understand there was at least one suggestion that we ought to build a research laboratory.

By and large, however, I think the majority of companies are basically favorable to the program just adopted.

This is proved, it seems to me, by the fact that we already have 86 percent of the potential money; also by the fact that I have not heard of any criticism of the program or the way it is being carried out up to now. This, no doubt, will come later after people learn more about it.

A number of companies expressed the opinion that the research program ought to be a part of the regular EEI budget. These companies are in favor of a reasonable increase in research and have gone along with the present plan, but they feel that research is such an integral part of an association's activity that it ought to be paid for by all members. As a matter of fact, Commonwealth Edison was and is one of these.

My hope is that the new setup can be administered so soundly that an even greater number of companies will come in. In fact, I look forward to the day when we will be able to merge the enlarged research program into the regular EEI budget.

What changes have been made in the mechanics for handling research?

George Watkins'* report shows that there has not been a significant change in the way EEI projects are handled or, for that matter, in the philosophy being applied.

In the past, EEI research projects have been handled through steering committees representing the interested technical committees. Specific policy with respect to research proposals has been handled by a Research Projects Committee. Determination of over-all policy and general direction of the Research Projects group have heretofore been functions of the General Division Executive Committee.

* Mr. Watkins is EEI's Director of Research.

Nothing whatever is changed under the new setup except that the research functions previously performed by the General Division Executive Committee have been separated out and given to a new Research Division Executive Committee.

Basically, our function is to make policy recommendations to the Board of Directors.

I am chairman of this new committee and the other members are Phil Fleger of Duquesne Light; Ray Gibson of Hartford; Jack Horton of Southern California Edison; Don Luce of Public Service Electric and Gas; Bill Lynch of Texas Power and Light; and Bill Turner of Louisiana Power & Light.

What are the Institute's research policies?

I mentioned that our major function is to make recommendations with respect to over-all policy. We haven't been operating long enough to make too many important policy decisions. We have, however, considered a few subjects which may be of interest.

First is the matter of our expanded research program. In this connection, you must bear in mind that our last year's budget was $238,000, and this year we have contributions of $596,000. This does not leave room for any striking innovations, and we have no desire to make any.

Closely Controlled Program

As I understand it, we have had a closely controlled, reasonably effective program in the past. However, there wasn't enough money to do all the things the technical committees wanted to do.

Therefore, we look upon the increased money as providing the resources to carry out projects of the same general type as we have carried out before, but which we did not previously have money for. This, as I understand it, is a simple statement of our spending policy.

Another point is that we do not intend to commit our entire budget at the beginning of the year. We prefer to hold back money for projects which are certain to come up from time to time during the year.

There is no thought on the part of either the Research Projects Committee or the Executive Committee that we are required to spend in any year the total amount available. As a matter of fact, one of the objectives is to build up a modest reserve to take care of important projects which are likely to come up and for which, otherwise, no funds would be available.

I have put in a little time trying to figure out what our policy is with respect to the approval or disapproval of projects. Possibly my inability to make a clear statement is due to my newness on the job. Possibly we shouldn't try to spell out a detailed policy. In the alternative, perhaps, we ought to consider each proposed project on its own merits.

However, it seems to me that we ought at least to state a few basic principles for the guidance of the

(*Continued on page 216*)

Electric Power's Future Begins at 80

By Philip Sporn
President, American Electric Power Co., Inc.

IN 1882, just three years after he developed the carbon filament incandescent lamp, Thomas Edison placed in commercial operation the historic Pearl Street station. Thus, next year will mark the 80th anniversary of the founding of the electric power industry.

From a Modest Beginning

It was a modest enough beginning at Pearl Street that Sept. 4 afternoon, when at about 3 p.m. the switch was thrown and commercial electric service was begun with a load of approximately 400 lamps, each taking about 83 watts. By Dec. 1, 1883, more than a year later, the number of customers had reached 513, with 10,297 connected lamps, or a total load of about 860 kw. There were as yet no motors connected to the system.

In 1883 the United States produced and used nonhuman or mechanical energy equivalent to about 280 million tons of bituminous coal. More than half of this total was supplied by coal itself, wood still supplied more than a third, and oil already 11 percent. There was practically no natural gas. Obviously, an insignificant percentage of that total was converted to electric energy.

Last year the United States, having grown in population to 181 million from an estimated 55 million in 1883, utilized total energy of 1710 million tons of bituminous coal equivalent. Of this total, 333 million tons, or 19.5 percent, were converted into electric energy by the utility industry. In 1959, the last year for which data are available, the entire world, with a population of close to 3 billion, generated a little more than 2 trillion kwhr. The United States, with only about 6 percent of the world population, produced and used almost 40 percent of the world's electric energy.

There are several important observations that need to be underscored at this point. Electric power was pioneered, invented, promoted, and developed by private enterprise in the United States 80 years ago. Throughout all these 80 years our industry has contributed a major share of the basic advances in every phase of electric energy technology.

For the last 30 years, despite the electric growth in the rest of the world and especially in the newly developing nations, this country has continued to account for about 40 percent of the world's electric energy. More significant, the share of total energy converted to the electric form has risen continuously until, by 1960, despite the dramatic improvements in the efficiency of conversion, it reached a figure of 19.5 per cent.

The electric power industry in the United States has pioneered in planning, in projecting, in bringing into being and operating what is today the largest single aggregation of capital facilities of any industry ever developed by human enterprise and human ingenuity. Over its nearly 80-year history the growth of the industry has been at the phenomenal long-term average growth rate of close to 7.2 percent, or a doubling every 10 years.

The industry has pioneered in the development of mass-scale generation, especially of thermal electric energy, mass movement of power by high voltage, and mass utilization. And throughout its history, under all circumstances—world wars and peacetime booms—the industry has made available to the American people an abundance of electric energy without the need for rationing, brownouts, blackouts, or any other restrictions on use. This is a record unmatched anywhere else in the world.

Four Decades of Planning

With that kind of history of successfully anticipating and fully meeting the country's needs, and with an almost inbred comprehension of the need for forward projection and planning, the industry has recently been advancing its projections of electric energy requirements to the end of the century—40 years of forward-looking planning. The picture that emerges out

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of such difficult but necessary and highly important crystal-gazing is indeed a fantastic one.

What does this picture look like?

Of the 1.7 billion tons of coal equivalent of all primary sources of energy utilized in this country in 1960 —coal, petroleum, gas, and hydro—the electric utility industry utilized approximately 19.5 percent or some 333 million tons, for the generation of over 750 billion kwhr. By the year 2000, the best estimate is that the total energy use of the country will be 4 billion tons of coal equivalent, and the generation of 6 trillion kwhr by the electric utility industry will account for 40 percent of the total energy, or the equivalent of 1.6 billion tons of coal—an amount almost equal to the *total energy* consumed in the United States last year.

Thus, electric energy in the four decades, 1960 to 2000, will have multiplied eight-fold compared with a two-and-a-half-fold increase in total energy. At the same time, while the relative positon of hydro, coal, oil, and gas in the national energy picture will have declined, electric energy will have had no problem in doubling its position in the national energy picture from 19.5 percent to 40 percent by virtue of two important considerations:

- The increase in efficiency of conversion of raw energy to electric energy.
- The new sources of energy that will have become available to electric energy, namely, nuclear fission energy, with at least the prospect of a possible beginning of fusion energy.

This clearly points to the enormous and exciting opportunities for the electric utility industry, but at the same time accents the challenge and the grave burden of responsibility confronting the industry. With the estimated octupling in the kilowatt-hour figures, and the close to octupling in the capacity installed, from 175 million kw to 1,250 million kw, the investment can be expected to grow to the staggering figure of approximately $400 billion, and the revenues to $80 billion, compared with $62 billion and $11.2 billion, respectively, in 1960. These are exciting and yet sobering figures, both to those of us engaged in the utility business and to those engaged in the research, development, design, and manufacture of the vast complex of equipment that this will require.

Fantastic Figures

They are more than that: they are fantastic, almost unbelievable, figures. But who, looking back 80 years to Pearl Street or even looking back halfway to the year 1920, when total installed capacity was 12,700,000 kw, total electric generation less than 40 billion kwhr, and total investment only $4 billion, can possibly say these projections are too fantastic for realization?

And yet, even as one contemplates this picture, one cannot help but listen to the obtruding and insistent question: Is there anything wrong with the picture being painted? How sure can one really be that these things not only can but will come to pass?

It must be admitted that when boldly questioned this way, and when one faces up to it in the light of what has been happening in recent years, the inescapable answer must be that there is plenty that can go wrong with this rosy and fascinating picture. There is plenty that can prevent this kind of future from coming into being.

Some Recognize Exciting Future

Because, while there are those who recognize this exciting and beckoning future as a summons to strenuous effort and to days, weeks, and years of difficult planning and building to bring many large complexes into fruitful operation, there appear to be others who believe there is a simpler way. They seem to believe in preordination: that they can sit back and let these things that are portrayed for them rather vaguely on the screen of the future come into being by some process of autoconception; and, of course, at the proper time they will step in and reap the rewards of what will have taken place so effortlessly, painlessly—almost automatically. They do not seem to understand that this kind of future cannot and will not come into being by itself. They do not realize there is much, perhaps far too much, that needs to be done, and even much more which, if left undone, will prevent the realization of these bright prospects.

It is to examine some of the things that remain to be done both by way of new pioneering and by way of re-emphasis and re-affirmation of past ideas and ideals that the industry has permitted to become neglected or has become lax about observing; it is to re-examine basic ideologies, basic economic faith, and specifically faith in the ability of the predominantly investor-owned industry to fully hold its own in the continuing and—perhaps to be intensified—competitive struggle; it is to re-explore the industry's basic confidence in science, in technology, and their further development as sources of strength of this industry that was founded upon science and technology—these are the real motivations for this discussion.

I focus on the proposition that the great future of private enterprise in electric power so clearly indicated by our projections is contingent upon our recognition of and proper response to the following difficult challenges that face us, or lie ahead.

1. *Price*—The age of the pioneers in the electric industry has passed into history. In most cases the successors to the pioneers have come and gone, and we now have a third generation of utility executives. The youth of this new generation is all to the good. But in many places in many parts of the country, it is clear that the new generation functions on the basis that it has almost all the answers required in the utility industry to run a successful enterprise. Perhaps it has—for now. But how about the future?

For one thing, in establishing the price at which their service is sold, I fear that they tend to overlook the historically great influence of the long-term declining trend in the price of our product on the development of the electric power industry to its present position. And the manufacturers, who have done so much to help the industry grow, develop, and prosper,

and who in turn have prospered from serving the industry, have tended to forget the importance of this downward price trend. This indispensable feedback relationship, with reduction in cost opening up new avenues of service, and new avenues of service making possible growth in the business, and therefore growth in scale and efficiency of generation, transmission, distribution, and every other phase of our operations, is too vital to be given up without a struggle. It is so important that one cannot help but feel distressed by a complacency of attitude that is basically summed up by the following: "Well, we are running the business and doing it successfully; to continue to do this we have to have a good rate of return; and if current profits are not good enough we have to, and so we are going to, raise rates."

A Deadly Attitude

I believe this is a deadly attitude for the electric utility industry. I do not mean that rate increases have got to be disavowed as a necessary step to be taken under extreme conditions. But this idea that price is no object, because the service is already a good bargain; or, even, what is the public going to do about it? is not good sense, nor good social-economics, in the United States at any rate.

One of the things that the public may do, if this philosophy becomes dominant, is to socialize power. I do not doubt in the long run this will fail of its objective, but it could happen. Large apparent savings, mostly at the expense of the Federal government's tax collection program, can be shown initially. Once socialized, it may be a long time, if ever, before the industry could be desocialized. In fact, it is probably safe to say it will *never* be desocialized.

If we have such a being as a patron saint in the electric power industry, it surely would be Thomas Edison. More than 70 years ago, writing to a friend and, I believe, licensee, he said:

> "To my mind the raising of the price from ¾ to 1 cent per lamphour is a bid for competition. I am a believer in *insuring the permanency of an investment* by keeping prices so low that there is no inducement to others to come in and ruin it."

Many developments may take place that indicate an apparent need to raise prices. I say apparent because frequently there are ways and means of fighting the unfavorable developments, of even fighting the fundamentals that bring about the seemingly unavoidable needs for raising prices. It may be that the whole concept of generation—how and where to generate—has gotten into a rut. It may be that the basic concept of transmission is wasteful and inefficient. It could be that the concept of the markets that are available is a limited concept. Perhaps all these fundamentals can be approached in a new way to bring about reductions in cost to avoid increases in price. But to do that we must have strong and well-informed active leadership, and this brings me to the second basic challenge.

2. *The Need for Leadership*—Nothing important in world events is ever accomplished without leadership, and this is as true of the affairs and destiny of an industry as it is true of the much larger affairs and more important destiny of a nation, or indeed of the world.

The electric power industry can neither capitalize on its opportunities nor meet its responsibilities in developing its future without leadership—leadership which will assert boldly the place of electric energy in our society today and in the years to come; leadership which will not accept the inevitability of higher costs of methods of producing electric energy, transmitting it, or distributing it; leadership which will not fail to embrace boldly the opportunities that are open to electric energy by entering new areas of service and undertaking new responsibilities, such as the concept and responsibility of electric energy as the sole and universal source of energy.

Do we have leadership in electric energy when we take a position that of course we sell electricity, but we sell gas also, and so are indifferent as to whichever the customer chooses? Some day, very effectively persuaded by an uninhibited energy marketing organization, the customer may decide that he wants it all in a third form. Are we really satisfied to be neutral and neutralized until he makes that choice? Is it fair to the customer?

When Thomas Edison set about to develop an electric lighting system and he had an opportunity to ponder on the problem that he was tackling, he sat down in his study and in his notes put down the essence of his problem:

> "Electricity versus gas as General Illuminant Object: E. to effect exact imitation of all done by gas, to replace lighting by gas by lighting by electricity. To improve the illumination to such an extent as to meet all requirements of natural, artificial and commercial conditions."

Edison, the Man

There was pioneering; there was boldness; there was vision; there was faith; there was leadership in this daring projection of Thomas Edison. It was this kind of spirit that 80 years ago created the new electric industry. Can leadership of lesser boldness and quality than that satisfy us today? We need new pioneers in this and coming generations to carry the industry to greater heights. We need imaginative, bold, strong, leadership in every segment of our operations.

Leadership in production—It was only a short while ago and even as we were in process of installing much larger steam-electric generating units, that we were being assured by some of the best technologists among our equipment manufacturers that beyond around 225 mw any further increases in unit size would be faced with a steeply rising cost per kilowatt. This, we were assured, was a fundamental intrinsic to the technology, and was confirmed by manufacturing cost records. However, some of us recognized this as the same pseudo-fundamental law that we had met earlier when we were assured that 39,800 kw was the limit to size of a 3600-rpm alternator, and we exerted strenuous efforts

to resist and to break down this supposedly technological barrier.

And Now Today

Today, less than a year later, we have seen not only the bringing into service of several 500,000-kw units having thermal efficiencies in excess of 40 percent, but within the last few months we have had two 900-mw units placed on order that will end up perhaps as 950-mw units, and we have had one 580-mw unit ordered, that may end up at 600 mw. Those huge units have been purchased at costs per kilowatt substantially below the optimum set by previous much lower-sized units. All three of these machines are at a new plateau of pressure of 3500 psi, and will attain new levels of thermal efficiency hardly imagined only a few years ago. They represent a rational trend of substantially decreasing cost per kilowatt with increased size.

Thus we have rather quickly and quietly come into the era of 1000 mw in a single unit. And with this, the era of 1000 mw at a *single plant location* has come and has hardly had time to take a bow, before it has been pushed out of the way to make room for the 2000-, 2500-, or 3000-mw plant at a single location that is well on the way.

The economies that these developments make possible have opened up new vistas in mass generation of electric energy.

These great visions in power production I have been discussing simply will not come about unless we have leadership in this phase of our operations. But such leadership is only a part of a program of leadership in the many other facets of our business that equally require it.

I not only refer to the need of leadership to push and enlarge these developments further by aiding and stimulating new ideas in MHD generation, or unusual concepts in nuclear power; but I refer to the obvious need of leadership in developing and extending extra-high-voltage networks at 345,000 and higher voltages; to leadership in many other aspects of our industry, from leadership in developing a more dynamic view of corporate organization and more effective regional integration on one end, to leadership in developing higher utilization voltages and eliminating the weather hazard to the continuity of our service at the other end.

I want to single out one particular phase of our business that literally cries out for bold and aggressive leadership—the *field of electric energy utilization*. I have already mentioned the exciting concept of the single or universal energy source that electric energy can provide. I have recently talked to a number of utility people about it and one of them said to me: "Of course, this is a good idea. But that is the Utopia of our business." He said this, being fully aware, as are we, that the "Utopia" of Sir Thomas More has become a synonym for the unattainable. This is what he really meant by the "Utopia of our business."

But the single energy course is neither unattainable, nor is it a concept of the future. It is an excellent concept for today. For where? It is a good concept for the residential market. It is a good concept for the commercial market. It is an equally good concept for the industrial market. But it will take a great deal of vigorous leadership—I mean *electrical sales leadership*—to bring it about.

I know that at this point some of my colleagues in our industry so ably managing combination companies will demur and point out that it is so easy to adopt such a program if one has no gas operation responsibility. But let me point out that this is no longer a valid answer. The American Gas journal for May, 1961, reporting on a joint venture to develop a natural gas fuel cell announced by Northern Natural Gas Co. and Houdry Process Corp. stated:

> "Goal of the two companies is to provide electricity right in the homes and in factories by using a fuel cell powered with natural gas which will supply all of the energy requirements of a household or business at costs significantly less than current sources."
>
> By "current sources" is meant electric power companies.

This is a laudable aim for the gas companies. The electric power industry has developed to its present position despite the fact that it arrived on the scene two-thirds of a century behind the gas industry. And it will hold its own competitively in the future against gas—of that I am certain—provided there is effective competition.

I ask you, can any company serving electric energy back away from this challenge and the responsibility to develop electric energy as the single or universal energy source?

And I do not want to leave the subject of leadership without an observation on leadership in bringing about new developments in general, particularly new technological developments, that may have a pronounced influence on our future. It seems to me that here, in particular, we need a re-orientation.

Last December EEI released a report on direct energy conversion prepared by a consultant. It was a good review of the work carried out to date and currently going on in such areas as fuel cells, magneto-hydrodynamics, thermionics, and the like. There was only one thing wrong with the report—it came to a very dangerous conclusion, and I would like to quote part of it.

> "The present state of the art calls for no stampede and for no crash program. This does not suggest complacency because there are bound to be significant developments with the passage of time.
>
> ". . . Close and continued scrutiny of technological progress should serve to evaluate and to anticipate the changes so that the industry can accommodate itself without fear of revolutionary upheavals."

What Is Wrong?

What is wrong with these conclusions? Two things, and they are everything. First, why wasn't the report prepared by an industry group? Are we so talent-poor? Second, why are there "bound to be significant devel-

opments?" Who will assure them? Certainly not we if we only sit idly by, prepared to do our scrutinizing. Surely, we cannot afford not to immerse ourselves deeply in every avenue of approach to technological progress and actively participate in the research and development. Must we "accommodate" ourselves? This is the surest way to disaster.

Let the Industry Do It!

The industry is mature enough to take its destiny into its own hands. If a revolution is in the making, let the industry make that revolution, or someone else will make it for us. We in the electric business must be ready to supply electric energy irrespective of the means for its production—whether nuclear, MHD, fuel cells, or any other technology. Indeed, we must take the initiative in pursuing these technological avenues of progress as an intrinsic part of our opportunities and responsibilities.

3. *The Place of Public Power*—Although public power was an element in our power economy before the advent of the New Deal, it was an insignificant one until then. In 1932, for example, the electric energy produced by governmental agencies was approximately 5 percent of the total, but by 1959 the figure had grown to 23 percent. Its growth is not the result of any single factor, nor indeed is it the result of the conversion of the American electorate to the gospel of governmental power—although there are a good many of our citizens who believe that electric energy generation is a proper field for government and that, indeed, it belongs to government.

I think the important thing to remember is that electric energy, being a versatile and, for some purposes, an indispensable tool, offers opportunities for all sorts of agencies in a complex society to get involved in its supply. Thus in irrigation it was quite natural for the government to find a way of helping irrigation economics by resorting to electric energy generation.

And in the case of TVA, which accounts today for about 50 percent of the total governmental agency figure, its entry into that field and the expansion of its position were the results, among other reasons, of a complex series of opportunities that were missed or side-stepped by the private or investor-owned utilities and taken advantage of by TVA.

Among the missed opportunities can be mentioned the failure of the original peripheral neighbors of Muscle Shoals to integrate that operation properly into their systems, and the failure of too large a percentage of the investor-owned industry to recognize both their opportunities and responsibilities to electrify rural USA in the early and middle Thirties.

Further, it might be noted that fully half of TVA's total generation represents the supply to the Atomic Energy Commission which, in turn, represents some 4 percent of the current national total. TVA was able to obtain this market because the initial diffusion plants were located at Oak Ridge, and because the private utilities either did not have an opportunity or did not see their way to find a mechanism for offering to AEC service and rates which were competitive. It was not until Electric Energy Inc. and OVEC came along that it was clearly demonstrated that capable as was TVA there was nothing unique in its ability that private enterprise could not match or surpass. But this kind of alertness may have been missing earlier. *And this lack of alertness to both opportunity and responsibility again and again has accounted for the growth of public power.*

I do not mean to say by this that there are not strong political slants to public power. There are, we know, a great many people in the Congress and in both parties who are firm believers in more government, and more government in power, at least in their areas. But even here the convictions, in many cases held with great earnestness and tenacity, are based on misunderstanding and improper analytical information, and can be changed. But the change can be accomplished only by a difficult, always unremitting, and earnest effort to bring about a proper understanding of the technical, economic and social-economic considerations. But this represents a separate challenge.

4. *The Ability to Defend Itself*—In a way this is a sales *challenge*—but an especially tough one—selling the *idea* of private enterprise in power. But not only in public power, but in other fields as well, the industry has been and will continue to be confronted with many legislative proposals that would be detrimental to the interests of individual power companies, of the industry as a whole, and in many cases to the interests of large regions of the country, or even of the United States. But in this difficult field of action, there has been less and less tendency for the people of the industry, the heads of the various power enterprises, to defend their positions and their interests vigorously and in person.

When in Washington . . .

To do so effectively means in many cases frequent appearances before Congressional committees. I have never found, except in minor cases, anything but the utmost consideration being given by the members of our Congressional committees, even those of different political or social-economic faith, to anyone who represented a major economic interest that was threatened, who appeared before it and knowledgeably and sincerely pleaded his case. It is possible to convert people in Congress to a point of view with regard to a piece of legislation different from the view they had when it was first introduced, but it takes a lot of hard work, and it is no job for mercenaries or the hired men. It cannot be done by long distance, by radio or television; it cannot be done by advertisements; and it cannot be done by feeding matter to the newspapers. All of these activities may help, but I do not believe it is possible to have any effective influence in Washington if one stays away from Washington. As a matter of fact, this convention should not have been held in New York. It would have been much better to have held it in Washington.

In early May the National Association of Broadcas-

ters held its annual convention in Washington. Broadcasters are constantly in the public eye, and no matter how much many programs please many people, there are always many others who object. Stations are licensed for three years and are subject to complaint and pressures, including pressures to have government operate them. But the broadcasters seem to find it wise to meet in Washington from time to time. I see no reason why they would keep on doing it otherwise. They know they will get some strong criticism and even threats, but appear to be willing to face the music and fight back—and also to work to improve their performance.

Kennedy Addressed Broadcasters

This year the National Association of Broadcasters had on their speakers' list President Kennedy, who brought along as his guests Commander and Mrs. Alan Shepard, as well as Vice President Johnson. Others who talked included the new FCC Chairman Newton Minow, Secretary Ribicoff, Major General Medaris, Dr. Edward Teller, and a panel of the FCC commissioners who answered questions submitted in advance, as well as questions from the floor. There were many other speakers from the field of education, engineering, and public service.

Not all the speakers were kind or flattering in their remarks. Chairman Minow delivered a searing critique of the TV industry's programs. Calling them "a vast wasteland," he pointed out to the broadcasters their obligations not only to look to popularity, but to also serve the nation's needs. Chairman Minow's demand for better TV was seconded by Secretary Ribicoff. Interestingly, NAB's own new president, the former Governor of Florida, LeRoy Collins, also decried the low estate of broadcasters, as compared with editors and publishers.

The seat of our government and the seat of authority in many fields which vitally affect us is Washington. I do not see why we cannot make up our minds, at the minimum, to hold our conventions at least every fourth year—every second year would be better—in Washington. This would give us an opportunity to invite and to tell the people in government of the great job the power industry is doing, to invite them to talk to us about their problems, and even to criticize us, and to tell us about some of our failings. We could benefit from listening to them in an atmosphere of candor and frankness and possibly even of good-will.

But the need to defend ourselves ideologically is not confined to defense against governmental attack. The attack may, and sometimes does, come from surprising sources. Not too long ago one of the world's largest utility companies in the communications field issued a long report, the burden of which was to argue for higher profit allowances by regulatory commissions in their business. The report referred, not only erroneously, I firmly believe, but with considerable evidence of ill will, to the electric utilities as being in about the same position as the railroads at the turn of this century—in other words, about ready to start a long, disastrous descent to the edge of bankruptcy.

It argued further, ignoring the price feedback effect I referred to earlier, that corporations should be permitted to take whatever rate of depreciation they chose, so long as tax and book depreciation were equal. This would inevitably result in higher rates, because utilities would have to choose between either not taking tax depreciation, and thus raising their cost of financing, or booking the higher tax depreciation, thus requiring higher rates to avoid a decline in earnings.

I was appalled to learn a few months ago that a number of our large electric companies were fully endorsing this view when, in fact, they should have joined others in the industry in openly attacking this report so full of fallacy, error, and intended mischief. I cite this as just another illustration of the many ways in which we have failed to recognize and defend our best interests, and to resist attack.

5. *The Ability to Attract Youth*—If the industry is to reach the position of growth and the position of importance in the American economy that we have been discussing, and if it is to defend itself and its future successfully, it must be able to bring in its full share of able youth to assume the positions of authority and responsibility. But we have had, and continue to have, difficulty in attracting capable young people. Far from lesser-quality, it will be necessary more and more to have higher-quality men, men of broader viewpoint, of more solid and broader education, men with specialized training on a base of broad education, and a great many more technicians and technologists trained in the skills required to meet the increasingly complex technical and technological problems of the industry—and I do not mean engineering alone.

The industry has not done too well in attracting its share of men of that kind to its ranks over the past quarter of a century. And while some of the blame can be ascribed to the deficiencies on the part of schools, deans, and faculties, I think a much greater blame can be ascribed to the utility organizations of the country themselves.

A Latent Smugness

The fact of the matter is we have not done enough to make a utility career an exciting adventure for our very bright and able people. I am afraid there is a latent smugness that somehow comes through. In some cases that I know of we have gone out of our way to be sure able and bright people did not come to us. The dean of engineering of one of our great schools of technology told me a few years ago of a utility executive who came to him and asked for the privilege of talking to the two men in the class having the lowest standing. When the dean expressed surprise at that, the reply was that, in the first place, they did not need the very bright men and, in the second place, they did not think they could hold them.

I do not know about the second, but I do know, as to the first reason, that if the utility industry problems on all fronts keep multiplying at the rate they have been multiplying there will be plenty of opportun-

ity for the very brightest people in engineering, in law, in finance, in business, in merchandising and selling, in advertising, in accounting, in the social sciences and humanities to find ample outlet for their abilities and ample challenge on which to sharpen their maturing knowledge and understanding.

Programs Must Be Developed

But programs for bringing this point of view to the attention of able young people have got to be developed, and on the whole, the industry has done very little. Unless it does more and does better, it simply will not have the manpower even to visualize these things that we have been talking about as they develop and come more sharply in focus, let alone the manpower which will have the imagination and understanding to be attracted by the challenges, to meet them and to carry through their development.

6. *Confidence in the Future*—The five challenges that I have so far discussed, which the industry must recognize and respond to in energetic fashion, are all vitally tied in to a sixth challenge, namely, confidence in the future.

If the industry is to adopt policies and programs based upon the great role that electric energy and the electric energy industry have to play in the future growth of this country; if it is to proceed on the theory that price and price reduction to the very lowest level consistent with proper protection of the interests of the general public, the customers, the employees, and investors offer a solid basis for growth and development; if it is to take vigorous leadership in espousing new ideas and new principles of utility system growth and development; if it is to face the question of public power with courage, resourcefulness, and with a great sense of responsibility and soberness; if it is to develop people able and willing to stand up and defend the industry for the great job it is doing for its customers, investors, employees and, most importantly, for the people of the country as a whole; if it is to serve as a magnet to attract some of the most vital young people we raise, year in and year out; if the industry is to do all these things it must do so on the basis of complete confidence that this kind of program is sound and solid. It must do so with complete confidence that it will lead to great gain in the welfare of the people of the area served, of the country as a whole, and the success of the power enterprise. It must be sold on these challenges, and it must sell these ideas to the nation.

Surely such confidence is indispensable if the industry is going to go ahead and build on the grand scale that the projections of its future have indicated will be necessary. Surely these great new plants, each costing $100 million or more of capital, that will be built in the next 40 years cannot be conceived and created successfully—if by success we mean technical feasibility and highly economical total cost—without the existence of highly expert, highly efficient, and completely dedicated organizations, and a major program of research and development, both technical and sales, participated in by the industry itself. But can such programs be organized and carried through and billions of dollars expended without great confidence in its future by the industry itself?

And there are steps beyond research. Surely it will involve large numbers of major experimental and prototype installations in generation, in transmission, in distribution, and in utilization. These, too, will involve millions of dollars of expenditures. But how can these be undertaken, how can the people be trained even to visualize them, without a solid confidence and complete belief in the future of the industry?

Of course, the industry may not meet the challenges that I have indicated. If the industry fails to meet them, there will still be power generated in the United States, large plants will be built, power may even be available in adequate quantity, perhaps with failures here and there, and at costs higher than anything the people of the United States have had to accept to date, but available, nevertheless. This may seem a harsh projection to make, but I do not think so. If, for example, we take a look at the spectacle of the city-owned local transportation system here in New York, with the trebling that has taken place in the price of a ride over the last 15 years and with an investment of over $2 billion, operating without any return and without paying a dollar of taxes to the treasury of the City of New York—surely this kind of development can eventually come about in power. It may take time; but it may be later than we think.

In any event, can private enterprise, can we in the investor-owned electric power industry in the United States, stand by and take a chance on that developing? If we do not meet the insistent challenges we have been discussing, this not only can come about, but probably will. But why should we not meet the challenges?

I repeat: in the 40 years between 1920 and 1960 the energy generated by the utilities of the United States increased 710 billion kwhr. But in the 40 years that lie ahead there is a prospect of the total 1960 generation multiplying eight-fold to 6 trillion kwhr in the year 2000.

Government from 4.3 to 23.2%

The percent of the total generated by government was 4.3 percent in 1920, and 23.2 percent in 1960—a five-fold growth in the last 40 years. What will be the growth in this percentage in the next 40 years?

I believe that what it will be in the year 2000 is up to us. Will it grow two-fold? Three-fold? It does not need to; it does not even have to grow by 25 percent. But this is so only if the utility industry recognizes that, great as has been its growth since 1882, its future growth can be immeasureably greater; only if the industry accepts that potential future and strengthens its faith in that future and its ability to fully meet successfully the challenges that must be met to realize that potential. Only then can the industry be confident that with all the great history and performance it has integrated in its first four-fifths of a century, its future will just begin at 80.

Research by Manufacturers:

Future Power—Progress Report

By L. J. Linde
Director of Engineering Services, Allis-Chalmers Manufacturing Co.

THE imaginative approaches used in the various research programs for power generation have directed the interest of many of our scientists and engineers away from space vehicles or other competitive sciences. These newer research activities in power are actually a broadening of the earlier nuclear-fission programs with many scientific achievements yet to be registered.

As producers of power, each of you must have an active interest in the various scientific and engineering programs practiced in this search for new power sources. It is proper that you be advised of the progress of these many projects. There is variety in these research programs. Not all of them will be successful. We do not yet recognize what the final power source may be, and, although we are not diverting our primary interest from the familiar steam-turbine cycle, we are enthused with a few of these less-conventional sources and methods of power generation.

At the risk of some controversy, here is a recent tabulation (Fig. 1) that compares the cost of power generated by conventional systems with some of the newer concepts of power supply. This tabulation shows the cost of power in mills per kilowatt-hour, after considering all of the usual or unusual operating costs, fuel costs, and maintenance costs, and includes an allowance of 6½ percent for net return on capital investment. Plant cost includes the entire plant for delivery to the switchyard.

Report on Two

Of these various types of power generation, there are two that will be reported on in brief. The first of these is power generation by using the science of magnetohydrodynamics, that science that treats with the influence of conducting and moving fluids or gases on magnetic fields. This concept shows a cost for power of 5¾ mills per kilowatt-hour. We are indebted to the American Electric Power Co., their associates, and AVCO for their early and continuing work in this field.

Gases, particularly combustion gases, become electrical conductors when ionized at temperatures of about 5000 F. Movement of these ionized gases through a magnetic field will generate electric power, power that can be collected on suitable electrodes placed at right angles to the magnetic field (Fig. 2).

Engineering Problems

Experimental studies, backing up earlier theoretical work, have already indicated the possibility of burning powdered coal at these ionizing temperatures. Such combustion temperatures can be realized by heating the combustion air in unconventional heat exchangers. The majority of the problems become engineering problems of dealing with these high temperatures, designing a proper system, and for generating or converting the useful power to alternating current.

Our company has maintained an active research and development program in this field for the past several years. The theoretical and experimental work has been carried on at our Advanced Development Laboratory at Newport Beach, Calif. We have used MHD Research, Inc., a scientific research group, to assist us in this work. During this same period, our engineers have completed a detailed design study of an actual MHD power plant, rated at 300 megawatts. Babcock & Wilcox was invited and has actually participated in this study. It has contributed much in the areas of combustion practices and methods of heat transfer. Sargent and Lundy has assisted us by providing the over-all plant design. Combustion and Explosive Research Inc. at Pittsburgh has assisted us in the study of combustion gases.

This entire study and all of its details are now being summarized for careful review within our respective organizations.

The figures which are shown in Fig. 1 reflect our

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 6, 1961.

YEAR	APPROXIMATE COST OF ELEC. PWR.	Rating MW	MILLS/KWHR
NOW	HYDRO ELECTRIC	500	4.00
1975	MAGNETOHYDRODYNAMICS	300	5.75
NOW	STEAM COAL	300	6.06
NOW	GAS TURBINE	33	6.70
1965	STEAM NUCLEAR	300	7.70
NOW	DIESEL	30	9.83
1970	FUEL CELL	30	10.00
?	FUSION	750	?

Based on 6.5% Return on Investment Fuel 30 / MILLION BTU

Figure 1

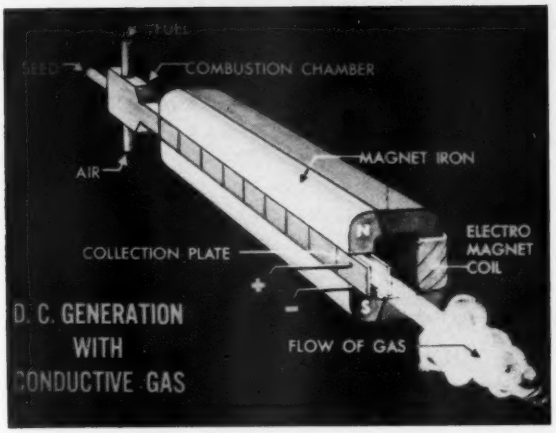


Figure 2

Figure 3

Figure 4

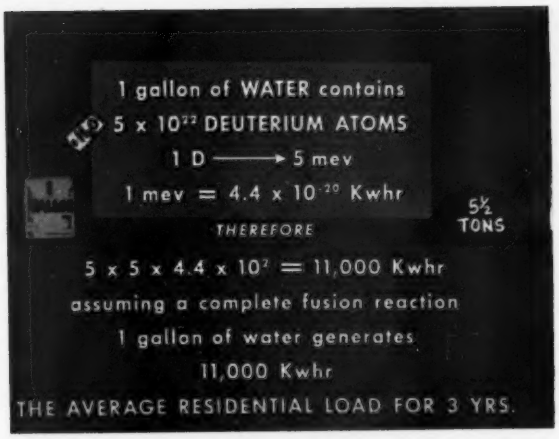

1 gallon of WATER contains
1/30
5 x 10²² DEUTERIUM ATOMS
1 D ⟶ 5 mev
1 mev = 4.4 x 10⁻²⁰ Kwhr
THEREFORE
5½ TONS
5 x 5 x 4.4 x 10² = 11,000 Kwhr
assuming a complete fusion reaction
1 gallon of water generates
11,000 Kwhr
THE AVERAGE RESIDENTIAL LOAD FOR 3 YRS.

Figure 5

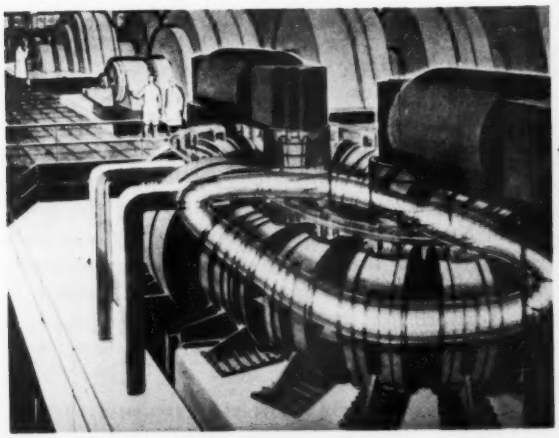


Figure 6

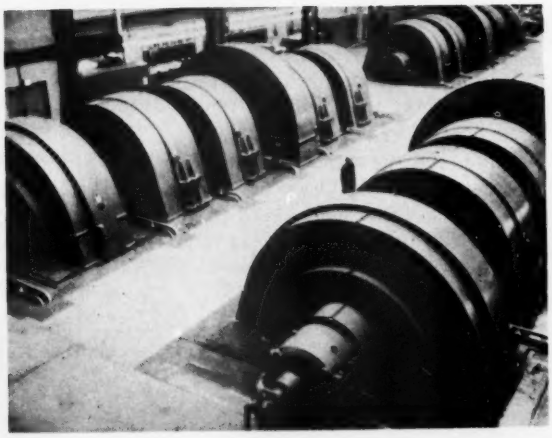


Figure 7

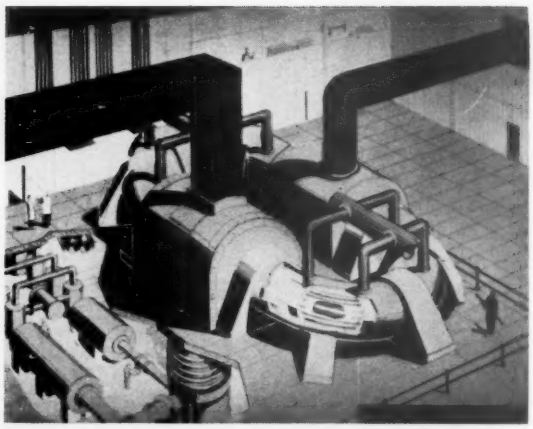


Figure 8

present evaluation of this system and show that a later 300-mw plant would have a complete cost of less than $170 per kilowatt, a heat rate of 6,500 Btu per kwhr, and that the power would be delivered to the switchyard at a gross cost of 5.75 mills per kwhr.

Here is our conception of the MHD power generator (Fig. 3). It is a massive stack of iron, copper, and thermal insulation, burning powdered coal and generating about 275 mw of direct current. A typical power plant might have this appearance (Fig. 4), with much of the electrical equipment required for converting the d-c power to the more useful 60-cycle, a-c. In line with our conservative approach to this revolutionary power plant, we estimate that a useful plant might go on the line about 15 years from now, in 1975 or 1976, the bicentennial of an earlier revolution.

Fusion Research

Of equal interest, but not as close to realization, is the research program in fusion power. Though this scientific activity continues to be a favorite subject of our Sunday supplements, it offers to all of us, and to the world, the final almost unlimited source of fuel for low-cost power. The primary fuel for fusion power is heavy hydrogen, deuterium. Fig. 5 evaluates the energy available from the fusion reaction of the heavy hydrogen in a gallon of water—fuel that is available for a few cents. By efficiently harnessing this fusion reaction to a power generator, the few cents of deuterium in a gallon of water can satisfy the average householder's power requirements for three years.

But, while the fuel is practically inexhaustible and of little cost, the establishment and control of a fusion reaction is difficult. Gases must be heated to about 500 million F to initiate fusion of the nuclei. The reaction must be confined by dense magnetic fields. An extreme gas purity must be maintained in the reaction vessel.

Of the many active research projects of the AEC-sponsored programs of fusion research, a program recognized as the Sherwood Program, an approach advanced by Dr. Lyman Spitzer of Princeton University, has considerable promise. Some of us from industry have had an opportunity to assist in this Stellarator project.

Two Companies Research

During the past several years, two companies, Allis-Chalmers and Radio Corp. of America, have designed, fabricated, installed, and are now completing final tests of a large fusion research facility for Princeton. This Plasma Physics Laboratory, sponsored by the AEC through its Sherwood Program, will direct all of its efforts toward establishing the knowledge for initiating and controlling the fusion reactions of the lighter elements. The final objective will be power from an unlimited source of fuel in the earth's waters.

Aside from the scientific challenge of this assignment, we from industry are pleased with the working arrangement that has been practiced at Princeton. Here the academic scientists, the government agencies, and private industry have worked closely together to achieve a common objective. This $35 million research facility is well equipped and organized to make valuable advances toward power by fusion.

A number of illustrations emphasize the magnitude of this research project. An early work of our artist (Fig. 6) illustrates the Stellarator, the vacuum vessel containing the hot reacting gases, the magnetic field, and the power supply for this dense magnetic confining field. This is hardly an accurate illustration, but does illustrate the principles of the Stellarator and the size of the equipment required.

When reduced to actual equipment, this power supply appears as shown in Fig. 7. Three m-g sets, each with four 4000-kw generators, provide one-second pulses of direct current in 200-mw bursts of power. This power is stored in the whirling inertia of the 96-ton flywheels coupled to each mg-set.

The Stellarator itself, a research tool, is a completely non-magnetic structure which resists the extreme forces of the magnetic field established by the confining field coils. Mechanical forces can exceed 3 million pounds across the machine. The eight-inch vacuum vessel, a race track 40 feet long, contains the heated gas. Bursts of power at radio frequencies will heat the gas through progressive stages to 500 million degrees.

At these extreme temperatures, the nuclei of deuterium will travel at velocities such that fusion is possible when the nuclei collide. When collisions occur, these nuclei fuse to form a nucleus of helium, plus a neutron and heat. The ash of the reaction is helium. There are no radioactive wastes.

For the past several weeks, the Princeton scientists have been supervising preliminary operations of this research tool. Even this early work marks a big step forward, for the gases of the plasma have performed with remarkable decorum.

It is an impressive sight when recognized as a research laboratory with but a single purpose—power from thermonuclear fusion.

Recent studies provide a conceptual design of an actual power plant. Fig. 8 is an illustration showing the result of an earlier study. At the time of this study, economic considerations dictated the minimum capacity of a fusion plant, using the principles of a Stellarator, as 5000 mw. Such a concentration of power might find limited applications in today's market.

New breakthroughs in alloys that act as super conductors, under cryogenic conditions, promise drastic breakthroughs in fusion plant economics. Alloys, such as Niobium 3 tin, that have no electrical resistance at temperatures below 18 degrees absolute are most exciting. Advances in this technology promise Stellarator power plants of conventional size and at conventional costs. All we need is the knowledge of how to initiate a fusion reaction, how to control a fusion reaction, and how to generate power from this reaction.

There are no predictions for the date of this accomplishment. The date can be advanced, however, if we in industry maintain our interest and cooperative efforts with the scientists and engineers who are dedicated to this very challenging task.

Research by Manufacturers:

Research and Future Power Transmission

By J. F. Young
General Manager, Electric Utility Engineering Operation, General Electric Co.

THE year was 1886 in Great Barrington, Massachusetts, when William Stanley closed the switch on the first alternating-current power system. Seventy-five years have passed; a-c systems now literally surround the world; and the opposition and criticism that confronted Stanley's innovation have since been interred, along with the strong personal convictions that carried him through to success. Against this anniversary background, it is a particular privilege to discuss some current research, and its impact upon future power transmission.

A convenient way to approach the subject is to explore two contrasting stimuli. One is the new technologies and by-product results growing out of research initially undertaken for other purposes. The other area is the research directly concerned with serving the needs or problems of power transmission (Fig. 1).

Activity in both areas is accelerating—the first in response to defense needs and innovative opportunities or requirements of our society; the latter in response to factors like the resurgence of interconnection and power pooling, the increasing costs of rights-of-way, and other reasons. (Fig. 2).

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 6, 1961.

Economy of Energy Transportation

This growing activity promises continuing contributions to improved economy and continuity of power transmission (Fig. 3). One can expect heavier line loadings, increased circuit miles of transmission lines, increased use of double circuit lines, terminal equipment of larger and more economical unit sizes, and an accelerating trend to higher transmission voltages.

The distance over which there is economy in transmitting energy electrically by wire, rather than as coal by rail, has steadily been increased. Fig. 4 is a comparison of installed costs of a heavily loaded, 50-mile transmission line carrying 1500 megawatts, and delivering energy at 138 kilovolts. Ten lines are required at 138 kv; two suffice at 345 kv and two are compared at 500 kv for continuity reasons. Note the terminal equipment portion of the installed costs rises with voltage, but the portion for lines, capitalized losses, and kvar supply decreases. The lowest cost for the assumed conditions is obtained with 345 kv.

Increasing transmission distance further favors

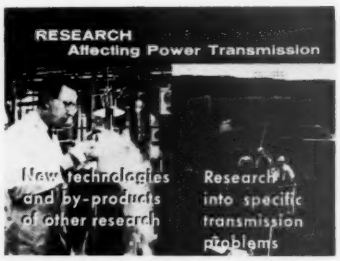
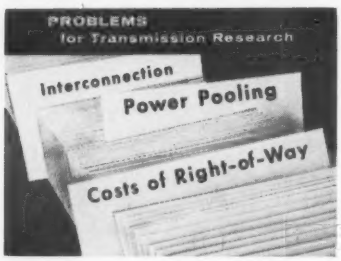

RESEARCH
Affecting Power Transmission
New technologies and by-products of other research
Research into specific transmission problems

Figure 1



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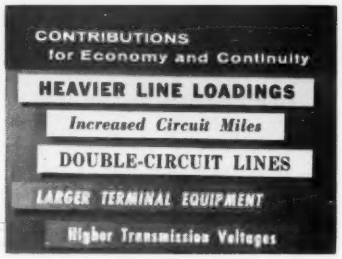

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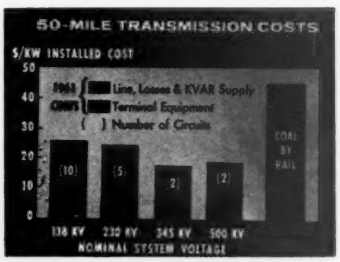

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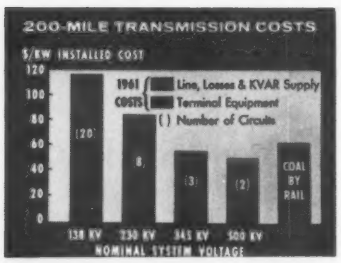

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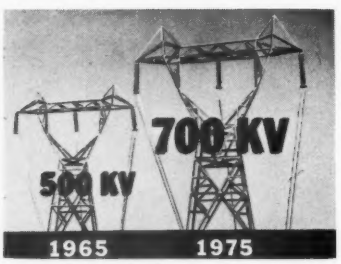

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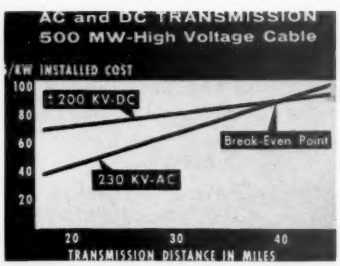

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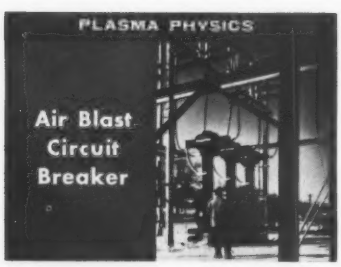

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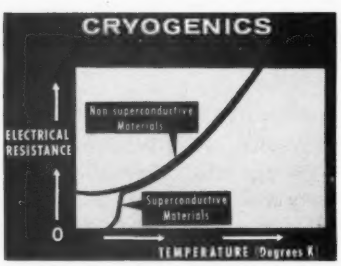

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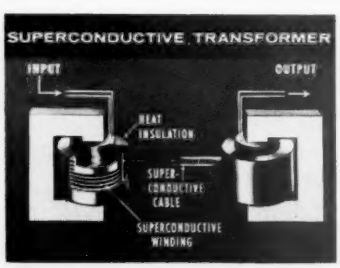

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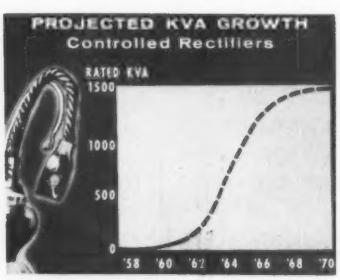

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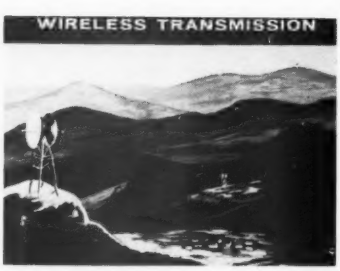

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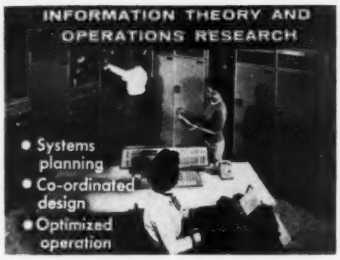

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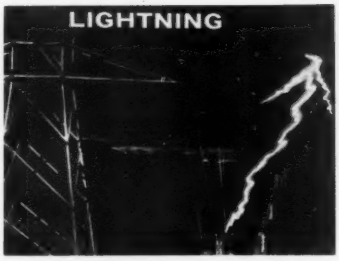
Figure 14

Figure 15



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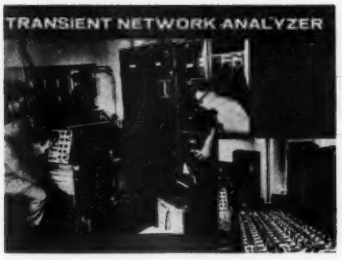

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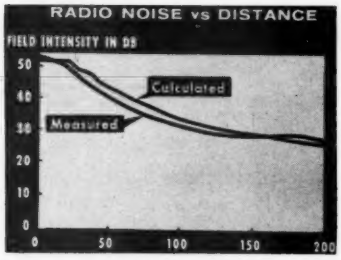

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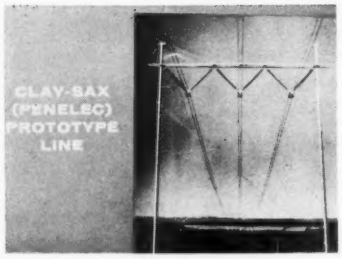

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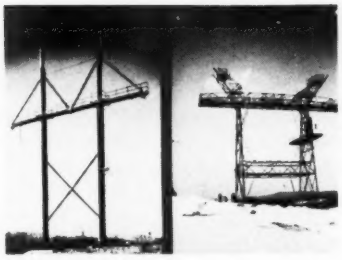

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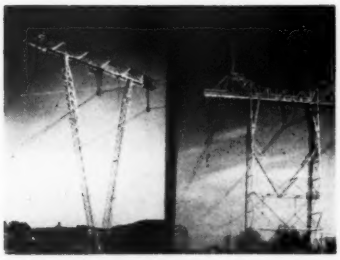


Figure 21

higher voltages. Fig. 5 is a comparison for 200-mile transmission, using the same assumptions as in the previous example. Twenty lines would be needed at 138 kv; three lines at 345; and two lines at 500 kv. Line investments are a larger part of the total, and 500 kv achieves the lowest installed cost.

The United States is in the process of selecting and applying a new extra-high-transmission voltage to overlay existing 230-kv systems. Previously, system voltages have been selected in multiples of 115 kv. Today, considering the world-wide interest in EHV and the international exchange of technical know-how, savings should accrue to all participants if research and development were directed toward one common voltage level, instead of two, as the next step. It is prudent therefore to suggest that 500 kv be considered for both international and American standards. Present trends indicate this voltage will be used in the United States by 1965, with good prospects for 700-kv applications by 1975 (Fig. 6).

D-C Transmission

While a-c overhead transmission voltages are resuming net growth of about 4 percent per year, American

interest in d-c transmission has been reawakened by recent activities in Sweden, Russia, England and France. Present equipment and technology, however, require point-to-point transmission distances of 500 miles or more, before economy favors d-c over a-c for overhead lines.

Metropolitan underground cable applications are another matter, since rights-of-way rather than distance may be the limiting factor. An economic comparison of moving 500 mw by 230 kv a-c, compared with plus and minus 200-kv, d-c cable, indicates d-c costs more up to an economic break-even distance of about 40 miles. (Fig. 7). Terminal equipment improvements and the promising a-c cable research at Cornell University may tend to reduce costs of both approaches; and a new future balance point could well justify a metropolitan cable circuit as the first economical installation of d-c transmission in the United States.

New Technologies

What are some of the new technologies that are likely to be of significance to future power transmission?

Plasma Physics—One of these is plasma physics, which was discussed by Mr. Linde. Plasmas are created when an arc is drawn between contacts of a switching device, and the principles of MHD govern arc behavior during interruption (Fig. 8). The knowledge acquired from present plasma research and MHD experiments offers prospects for improving lightning arresters and circuit breakers, perhaps further reducing switching time for the latter.

Cryogenics—At the other environmental extreme is the new field of cryogenics, the study of very low temperatures (Fig. 9). Some materials, as lead, tin, and niobium, lose their electrical resistance at temperatures near absolute zero, and become superconductors. If materials can be found that will be superconductive in liquid hydrogen (about 20.4 K) or even better, liquid nitrogen (77.3 K), then there are prospects for devising a superconductive cable, a-c or d-c, that could transmit a million amperes with very low losses. Fig. 10 shows the a-c version; the high-voltage transformer windings are also made of superconductors in the form of printed circuits. Other properties of materials experience large changes at cryogenic temperatures. These properties, along with the extra hard vacuum which accompanies the cryogenic environment of space, may also be significant in improving power transmission components.

Static Switching—Semiconductors are another budding technology that is already influencing power transmission. One new device, the controlled rectifier (Fig. 11), switches an electrical circuit in 40 microseconds, quickly enough to limit greatly short-circuit current. Its use in a circuit breaker should permit switching over 1 million volt-amperes at 3 kv in the next five years. But the art is young, and there may be hope for extending this technology into certain power transmission tasks. Meanwhile, other solid state devices, like transistors, have found their way into many powerline, microwave communication, and station equipments, where they promise smaller size, lower power requirements, and higher reliability.

Wireless Transmission — Speaking of microwave, about a year ago there was a report in the Soviet publication, *Technical Practice*, that all large towns and cities in Russia will, by 1985, be receiving their electric power from a transmission network utilizing neither cables nor wiring of any kind. Work in this country on high-power, microwave tubes and on improved antennae, while significant, has not yet reached the point where large blocks of power can be transmitted, except at relatively poor efficiencies. The pace of this work suggests that it be examined every few years. Even if it is not practicable for heavy loading over long distances, there may be special, short-distance situations in which microwave beam transmission may be necessary for utilization of available rights-of-way (Fig. 12).

Information Theory and Operations Research—An example of new technology that is closer to reality is the use of information theory and operations research, together with computing machines. These relatively new tools are providing a basis for advancing power systems planning, coordinated design, and optimized operation. They furnish new leverage to human judgment by permitting detailed evaluation of parts of a complex problem; yet they permit combining such evaluations for integrated decision-making (Fig. 13).

These techniques are now appearing in the mechanical and electrical design of transmission lines and towers; in the analysis and control of an automatic dispatching system, to assure most economical loading; and in over-all planning of power system expansion, not only of single systems but of integrated pools (Fig. 14).

Materials Research—No review of new technologies and their influence on power transmission is representative without mention of the significance of materials research (Fig. 15). Materials are the barriers to improvement of many products. And further improvements in magnetic steels, special alloys, insulations, and ceramics—to name a few—promise contributions to the perfection of today's electrical equipment, which now represents the highest product values ever offered.

Power System Research

Progress in improving the economy and the continuity of future power transmission is also being furthered by a number of supporting research projects. Most of them deal with phenomena which are not well understood, or on which further knowledge and understanding will serve to improve future transmission line design and operation.

Lightning (Fig. 16)—Some recently designed extra-high-voltage lines have turned out to be more vulnerable to lightning than predicted by calculation. Much work has already been done on insulation characteristics, surge response, and the characteristics of lightning. But more remains to be done, particularly toward understanding the lightning mechanism as related to line flashovers, and to verify a predictable theory.

Some of this research includes field measurement of response to actual lightning strokes. Other work employs simulated strokes applied by miniature surge generators suspended between gas-filled balloons and the tower. An impulse generator is being used to apply simulated lightning strokes to the EHV line near Pittsfield. Models are also useful to evaluate response of proposed line designs.

Deionization—When lightning causes a flashover of an insulator string, current flows through the breakdown path until circuit breakers isolate the faulted line section. On many systems it is important to restore the line section to service within a fraction of a second. Tests to determine how quickly voltage may be reapplied have resulted in a better understanding of the arc and post-arc phenomena, and have supported introduction of reclosing times faster than those previously believed feasible on extra-high-voltage systems.

Switching Surges—Switching surges have become of paramount importance in the design of reduced levels of insulation for high-voltage lines, stations, and apparatus. To gain greater understanding of these surges under various conditions, studies have been made on systems in miniature, as shown in this transient network analyzer setup (Fig. 17). The miniature system investigations are supplemented by field research using a mobile laboratory developed for the purpose.

Corona Loss, RI and TVI—Progress is being made in understanding and predicting the magnitudes of corona loss and radio or television interference. This work has included field experimentation, as in the high-altitude test line at Leadville, Colorado, and the new EHV project at Apple Grove. Although there is a need to improve understanding and predictability, these factors can now be assessed in studies of economic line design. Fig. 18 shows the radio noise vs. distance, measured on the Pittsfield EHV line. Note agreement with calculated noise profile.

Tower Design—Towers represent such a large part of EHV line costs that even small design refinements and improvements can be important. The Clay-Sax (Penelec) prototype line extends wood pole design to the 460 to 500-kv level (Fig. 19). Figs. 20 and 21 show towers designed by a number of suppliers and erected on the Pittsfield EHV line.

Deicing and Galloping Conductors—Not all problems confronting power transmission are yielding to research. One persistent problem is prevention or removal of ice and sleet on line conductors without taking the lines out of service. Another knotty problem is the galloping conductor.

A film provided by Alcoa shows this phenomenon on a 6600-v, operating line at Massena, New York. It is certainly spectacular, as well as hazardous. The problem is being investigated both theoretically and experimentally on special test lines in exposed locations, and in wind tunnels.

This, then, is a brief glimpse at current research of significance to future power transmission. It consists in supporting research aimed at solving specific transmission problems, and it seeks to employ the new technologies growing out of research for other purposes. Through it all, there is a significant pattern of integrating laboratory work, analytical work, and field experiment. This pattern emphasizes the common interests of utilities and manufacturers in power transmission research. While each separately undertakes timely projects for which it is uniquely equipped —and in which it can uniquely employ the results— there is a significant segment of research that can be purposefully attacked only with combined resources. This area expresses well the partnership that has typified progress in power transmission.

The Political and Economic Climate Ahead

(Continued from page 180)

Acton (who were classical liberals, not conservatives) and other notable exponents of liberty would find (1) a false notion. However, (2) may have some validity. To comprehend the basic arguments concerning freedom, one must necessarily have a good grasp of the nature of law, of government and legislation of economics and our economic system, none of them "easy" subjects. It would seem, then, that if the proponents of freedom are vanquished in open debate, (3) is the main culprit.

In this connection, it is important to emphasize that government and liberty are not mutually exclusive, although legislation which lacks a clear consensus and, more particularly, discriminatory legislation (deviations from the *rule of law*) does, in fact, abridge human liberty.

Legislation and policies generally which promote competition, increase knowledge of the market, and lead to more effective mobility of resources are not inconsistent with, and they actually improve, the operation of a free economy.

The position of those dedicated to the rule of law and freedom is seriously weakened when they do not stand clearly on the side of more competition in all cases, but this would mean that one's friends and natural allies, on occasion, may be subject to criticism.

This reluctance to give uniform support to the principle of competition in all features of economic life, and the soft-pedaling if not outright denial of a possibly constructive role for government measures within a constitutional framework, have probably contributed to the validity of (3).

If (3), that is, our deficiency in stating and defending the case for freedom, is the key culprit, it is obvious that *we must improve ourselves first*, before we tackle those who, wittingly or unwittingly, are paving the way for the total-state. This is the lesson we need to learn and then act upon it.

Research by Manufacturers:

There's Gold in Them Thar Poles, or, Distribution— Area of Opportunity

By Dr. J. A. Hutcheson
Vice President in Charge of Engineering, Westinghouse Electric Corp.

THE fact that we have historically given more thought to, and put more of our resources behind, improvements in generation and transmission (than distribution) is not subject to criticism. Those are the areas in which we had the most to gain through research and development; and I'm sure we are all convinced that these efforts have been, and will continue to be, immensely rewarding.

However, unlike your Federal power competitors, you have to deliver your product to the point of sale, and you have already invested $20 billion in distribution systems to do it.

Moreover, in the next 20 years, EEI companies will pour another $40 billion into distribution.

The question is: What are we going to buy with this money? More of what we already have?

I doubt it. For one thing, we can't go on forever making patchwork additions and stringing up more wire. This kind of expansion is too expensive to create and maintain. It takes up too much room. It creates poor public relations, and will eventually prove to be woefully inadequate to the needs of the times.

At the EEI Sales Conference in April, W. W. Sproul, Jr., talked about the Total Electric Frontier. He called attention to some of the things now going on in the construction industry in this country. He came up with some observations that delighted power salesmen, but must have frightened the wits out of any distribution men who might have been present.

He said: "Everywhere you look in this country, America is rebuilding. Within 10 years, we are going to erect new buildings equivalent in value to all that are standing today."

He called attention to a few of the projects that are in progress or under construction:

- The point development at Pittsburgh.
- The $50 million Hartford plaza.
- The $43 million project that will cover 35 acres of downtown Minneapolis.
- The Golden Gate project in San Francisco.
- The rebuilding of the riverfront in St. Louis.
- The whole new city that will rise in Los Angeles.
- College Park in Philadelphia, which contains, besides a shopping center, a group of office buildings, three apartment buildings, a major hotel, and an illuminated 18-hole golf course.

While these are only a few of hundreds of projects now under way, the point is every office building, every store, every apartment, every school and public building in this vast rebuilding program can be, should be, and—in the face of mounting evidence—probably will be total electric.

Add to this the tremendous acceptance of the Total Electric Home concept—today there are 250,000 more electrically heated homes than there were just two years ago—and you get some idea of the urgent necessity we face to bring our distribution systems up to the technological perfection we have achieved in generation and transmission.

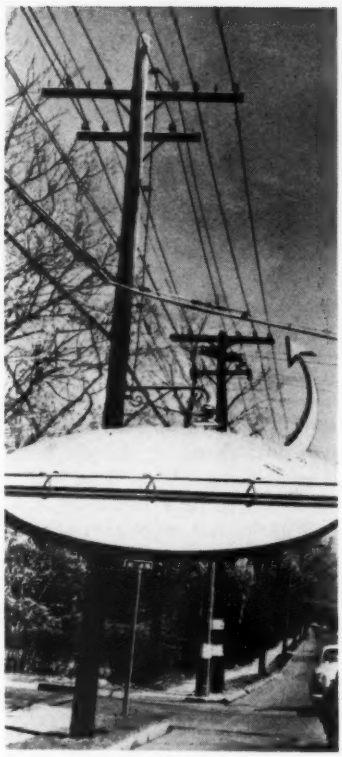
Now, how are we going to go about building more capability into tomorrow's distribution systems and still abide by the laws of depreciation economics which require that we retire our existing systems the same way they grew—piece by piece?

Big Jobs to Be Done

As I see it, there are two jobs to be done. First, we must continually upgrade our present systems by taking maximum advantage of existing knowledge and improved hardware. And second, we must turn our full attention to a program of research which studies the total function of the distribution system, and takes advantage of modern analytical techniques to evolve basic new methods of approach.

To accomplish the first objective—improvement of

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 6, 1961.



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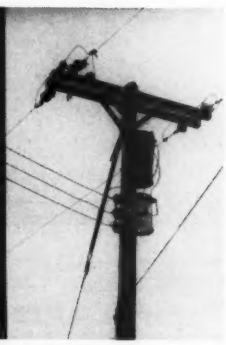

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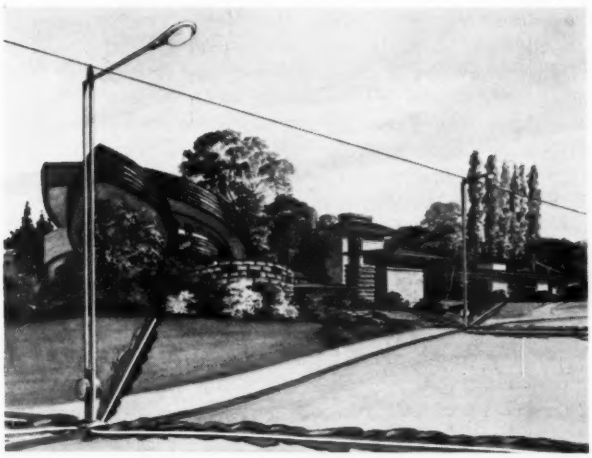

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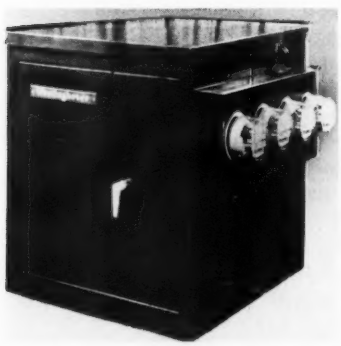

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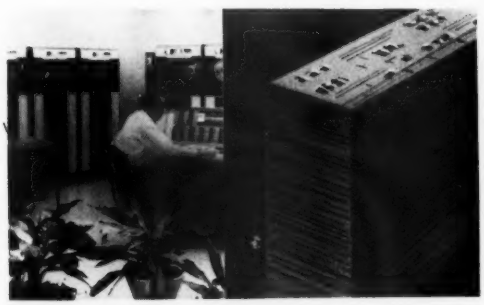

Figure 7

existing systems—there are a great many possibilities open to us.

Thanks to research by cable manufacturers, combined with extensive and costly full-scale experimentation by utilities, we have made progress in the never-ending battle with the elements.

Lashed and spacer-type cable, for example, proved itself during last year's hurricanes (Fig. 1).

On one system in an area where this type of construction had been employed, a hurricane caused only a few minor service problems. Elsewhere in the storm's path, 230,000 customers, served by conventional, open-wire circuits, were without power for as long as two days. Obviously, the improved construction will find wider application.

In the field of hardware, one item that recently evolved as a result of research is the automatic voltage regulator (Fig. 2). It is located right at the distribution transformer (Fig. 3). This is a revolutionary concept that opens immense new possibilities for optimizing total system designs. Accomplishments incorporated in this design, such as a completely transistorized control, will find application in future equipment developments.

Another item that anticipates the future without waiting for it to arrive is the pad-mounted transformer for underground service. This unit comes with built-in watt-hour meters (Fig. 4).

And in addition to equipment developments, joint studies between electrical manufacturer and utility engineering teams have led to development of new types of systems. The 460-volt secondary network incorporating spot network radial design is the brain child of such a partnership approach to your problems. The new system can reduce commercial distribution investment by 10 to 20 percent, compared with the conventional network. Network growth in many major cities has benefited from such studies.

The next logical step in this direction is under study and experimentation right now by utility and manufacturing engineering teams—higher utilization voltages for residential distribution. By stepping up from 120 volts-to-ground to 240, you will be able to utilize transformers four to 10 times the ratings of present systems. Studies indicate that this should result in an over-all system savings of 15 percent.

So, as we can see, there are many roads open to us for evolving system concepts that will result in greater capability and reduced costs on existing systems.

However, as we look toward the Total Electric Frontier, it seems obvious that we cannot hope to superimpose the kind of distribution we have today on top of this clean-cut, super-efficient community of tomorrow. We will be expected—in fact, commanded—to keep pace with the progress.

We can, of course, and we will, but our lead time is growing short.

Fortunately, for the first time in our history, we have available techniques and tools of research equal to the enormity of the problem of designing and developing optimum distribution systems. This new tool has a name. It is called "Operations Research," and many utilities around the country are experimenting with it.

Basically, what the Operations Research team does is set up a mathematical model of the system or operation which is under study.

This takes a little doing, because if you were to study a typical area of an urban-suburban distribution system, it would look to an astronaut like a meaningless mosaic pattern of substation load areas and a vascular network of feeder lines. No two areas are alike, nor is there any symmetry in the circuit patterns.

Where or When

In time, the loads inside each area will increase, but no one knows exactly where or when.

Staring at this disorderly array month after month, and trying to bring some order to it so that logic and analysis could be applied in studying it, the planning engineers came up with an idea.

Suppose, they said, that the same areas were covered, the same number of customers were served, and the same loads were supplied, but in an orderly, geometrically sensible pattern? Then the nonsense pattern would make sense.

The new pattern is hypothetical, to be sure, but it contains all the features of the load, and all the components of the system.

Because they now had the system reduced to regular polygons, triangles, squares, hexagons, and diamonds, these Euclidian representations could be easily calculated on a digital computer.

Now such things as circuit loadings, voltage drops, and losses could be expressed as simple equations, and the solution of these equations enabled them to choose the most economical system voltages, substation sizes, and circuit configurations for as many alternatives as they wished to investigate.

Planning studies using these techniques of geometric simulation invariably agree with conclusions arrived at the hard way, by painstaking, tedious, conventional methods.

By applying these techniques to actual distribution system planning, we can do some wonderful things.

For example, suppose a utility manager is faced with making a decision on whether 23 kilovolts is the right answer for the future of his system, or whether his present 4-kv or 13-kv distribution can do the job for 20 more years. The right answer will save millions of dollars and acres of real estate. To arrive at the one right answer we must look at thousands of alternatives, any one of which would occupy his engineering staff for months. Heretofore, it was a hopeless task. The best he could do was guess, secure in the knowledge that by the time his error was discovered, he would have been long since retired.

Today, however, using the methods I have described, a computer will come up with the right answer in a matter of minutes, along with several of the best alternatives and complete cost data.

(Continued on page 237)

Will Russia Catch Up?

By Edwin Vennard
Vice President and Managing Director,
Edison Electric Institute

A SUBJECT still uppermost in the minds of many people relates to the relative economic strength of the United States and Russia. Electric energy is part of this concern. It is generally known that we now use more energy and have more power capacity, but what about the rate of growth? Will Russia catch up? Will she cross us?

The use of electric energy is possibly the best single index of total productivity and the well-being of a people. In terms of both output and capability America is now far ahead. But Russia claims that, since her growth rate is now a higher percent figure than ours, the gap will soon be closed and Russia will pass us. This is of interest and concern to all Americans. If it is true, we need to know it so that we can take the proper steps to correct the situation. If it is not, we also need to know it, lest in taking needless emergency steps we do things that might be damaging to our economy and the people.

We are dealing with the essence of the Cold War: Russia claims that her system can produce more for those living under it than can the free economy. Let us see if this is so. Let us first examine the facts. Then we shall give an opinion as to the future trends.

Where We Stand Today

Before looking into the future, let us review the status of the two nations in terms of electric power. Last year kilowatt-hour generation in the U. S. (including Alaska and Hawaii) was 844 billion compared to Russia's 275 billion (Fig. 1). In capability we had approximately 192 million kilowatts in 1960, compared to Russia's 65 million.

Of at least equal significance is our lead in terms of transmission lines 35,000 volts and above. We have 304,220 miles of such line compared to 62,877 miles for Russia. Our transmission system is almost five times as extensive as that of Russia (Fig. 2). Here in America we have an interconnected network of power lines designed to take power wherever people want to use it. This system is without equal in the world—and we are constantly working to make it better (Fig. 3).

In America there is an ample power supply with adequate reserve for industry, business, farm, and home. The electric energy needs of the American people have been met in periods of both war and peace. Electric industry planning assures that America will continue to have an abundance of electric power.

Trend Away from Hydro

The U. S. and USSR each derives about 80 percent of its electrical energy from thermal plants (Fig. 4). The trend has been away from hydro plants, and very likely the trend in favor of steam will continue because of considerations of economy. Khrushchev questioned the economy of hydro plants when he said ". . . . the 1,000,000-kv Saratov Hydroelectric Station will cost more than 4 billion rubles . . . the cost (of thermal plants of equal capacity would be) about a billion rubles, or one-fourth as much. . . ."

Research has produced more dramatic engineering advances in thermal generation than in hydro and has reduced thermal costs so that with notable exceptions thermal plants are now more economical than hydro plants. Also contributing to this is the fact that in the United States the best hydro sites were the ones developed first, and those remaining undeveloped today are for the most part not as attractive economically.

So far as we know, no other nation, including Russia, has a nuclear power developmental program as comprehensive as that of the United States. At the end of 1960, 129 investor-owned electric companies were involved in 25 nuclear power projects ranging from research and development studies to the operation of

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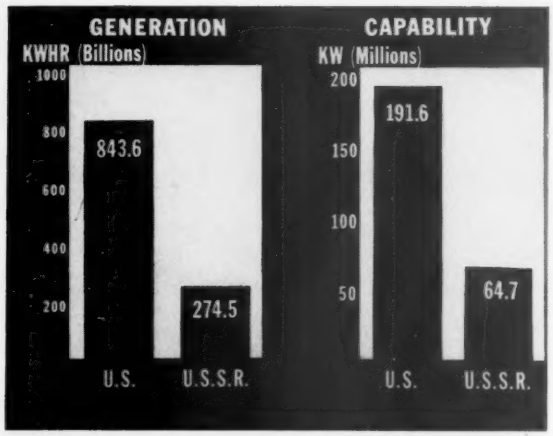

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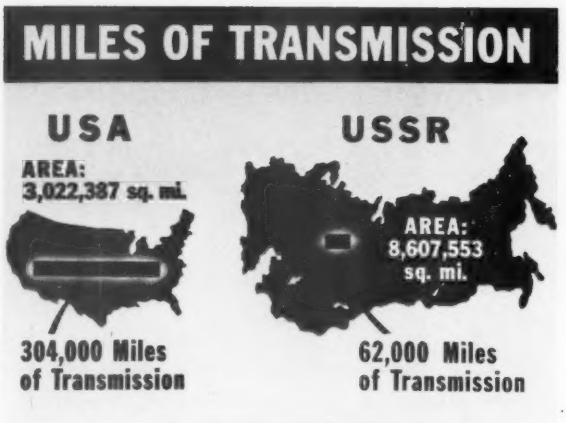

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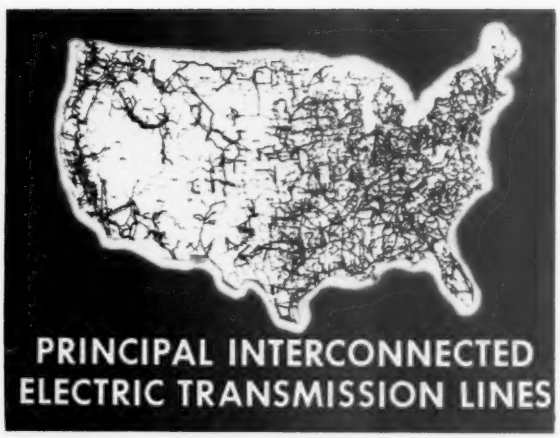

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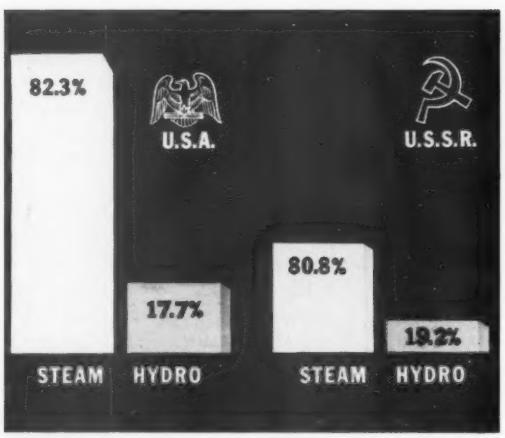

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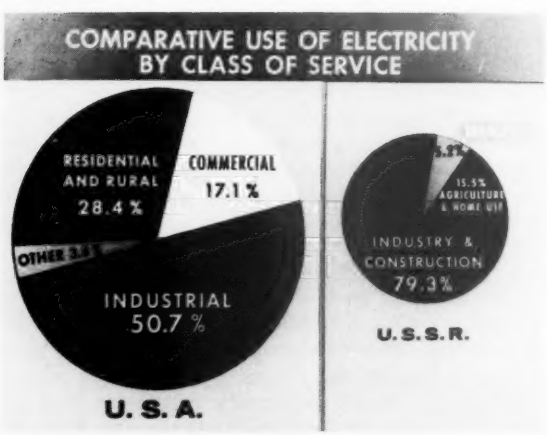

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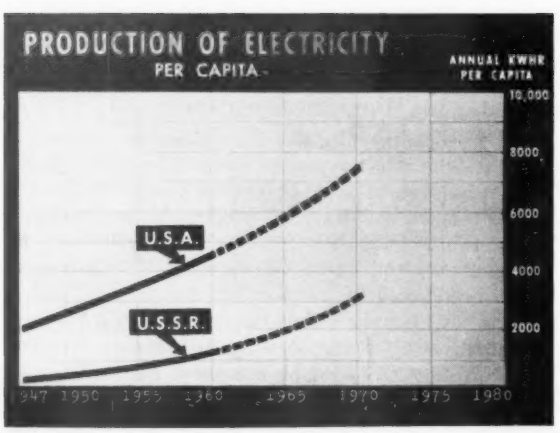

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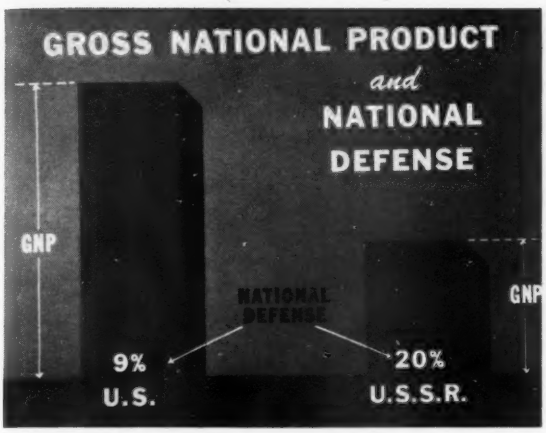

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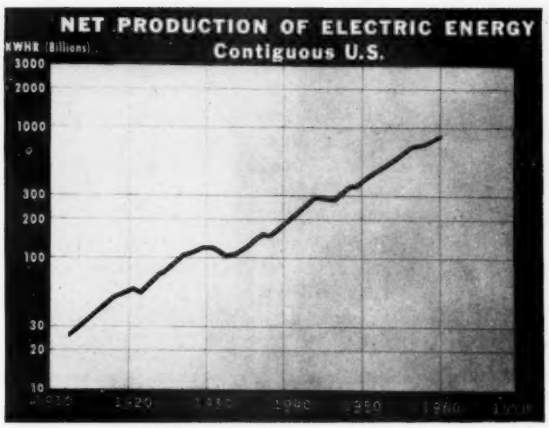


Figure 8

commercial-size nuclear power plants. These projects include 17 nuclear power plants that are in operation, under construction or in the design or planning stages. Estimated total electric companies' expenditures for these projects are over $700 million. The investor-owned electric companies are operating, building, designing or investigating seven different reactor types. The Russian program does not appear to be as diversified as ours. We know of only four nuclear power construction projects in which Russia is involved.

Of Russia's 196.7 billion kwhr used in 1957, about 79.3 percent went for industrial use and construction, 5.2 percent for transport, and 15.5 percent for agriculture and home use (Fig. 5). While the figures are not strictly comparable, our use by classes of service was as follows: industrial, 51 percent; commercial, 17 percent; residential, 28 percent; and other, 4 percent.

The vital comparison lies in kilowatt-hours per capita. This is the end result toward which both power systems are directed (Fig. 6). In 1960, the estimated use was 4,716 kwhr per capita in the United States. In Russia it was less than a third of that—1,322 kwhr. Russia's latest revised forecast puts the figure at about 3,000 kwhr per capita for 1970, when ours will be around 7,500.

The Two Societies

As we are discussing the relative productive capacity of two kinds of economic systems, it might be well to take a moment to describe these systems. People throughout the world generally refer to the Russian system as communism. Marx defined communism as a government-controlled and -planned economy where each person contributes according to his ability and each receives according to his needs.

That is theory. In practice, people in Russia are paid, as they are here, according to merit and ability and according to how much they produce—although real wages in Russia are about one-third of those here.

The Russian system is one of complete government ownership and operation of all means of production. It is a government-planned economy. It is the welfare state where all people are guaranteed a job, although it may not be of their own choosing. All people have guaranteed wages, although they cannot bargain for them and wages are quite low by our standards.

This is the oldest system on earth. We have at various times called the head man in such a system pharaoh, king, czar, fuehrer or premier. But regardless of what we call the head man, when government plans and controls the economy, the people are not free.

When we speak of a free society such as ours here in America, we mean freedom from government domination or control. We mean freedom to take care of our own welfare and well-being. We mean freedom to own and operate the means of producing the goods and services that we as individuals need and want for our individual welfare.

The Machinery of Production

Russia is now going through the process of mechanization and electrification of industry that we went through some 25 or 30 years ago. She realizes, as do we, that machine production is essential if a society is to produce an abundance of goods and services.

The United States' total production is some two to two-and-a-half times that of Russia. Obviously, a country of lower total productive capacity can concentrate on certain items and excel. This Russia has done. Since World War II, Russia has been concentrating on the production of goods that can be used for defense or war. For obvious reasons we have felt it necessary to match Russia in such production. However, because of Russia's lower total capacity, arms production takes a much larger percentage of her total output (Fig. 7).

In America, we use a large part of our productive capacity for making automobiles, refrigerators, boats, and the like. Almost every family has an automobile, a TV set, and a refrigerator.

In sharp contrast, the average Russian citizen gets to enjoy comparatively few of such articles. In Moscow, a city of 7 million people, there are five filling stations. As the average Russian home uses only about 500 kwhr per year, the Russian people cannot be using

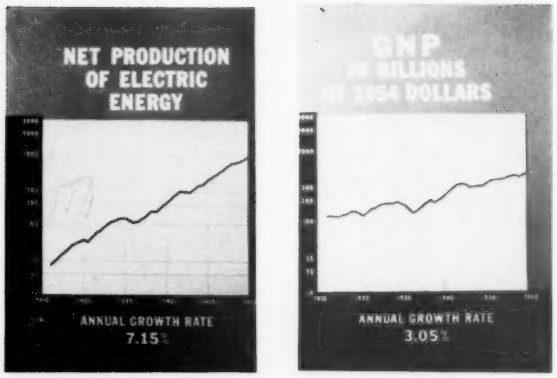


Figure 9

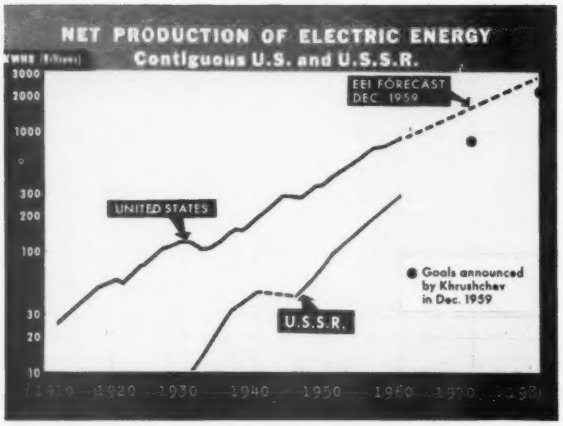
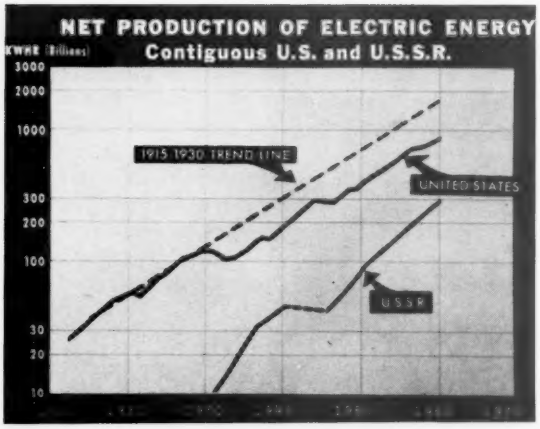


Figure 10



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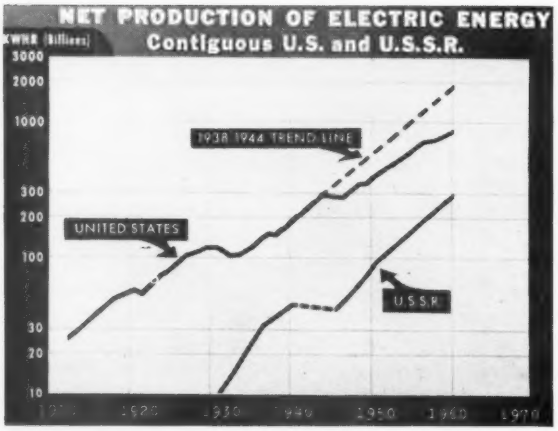

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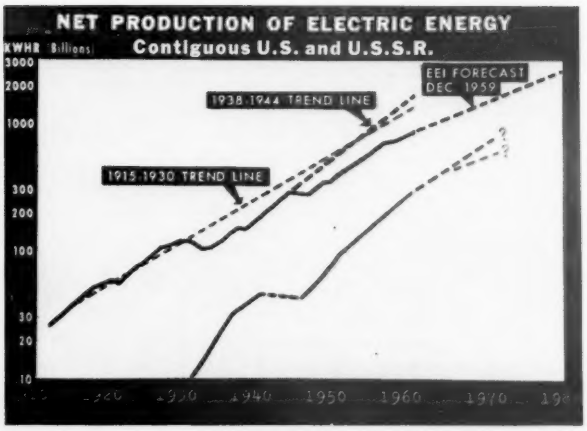


Figure 13

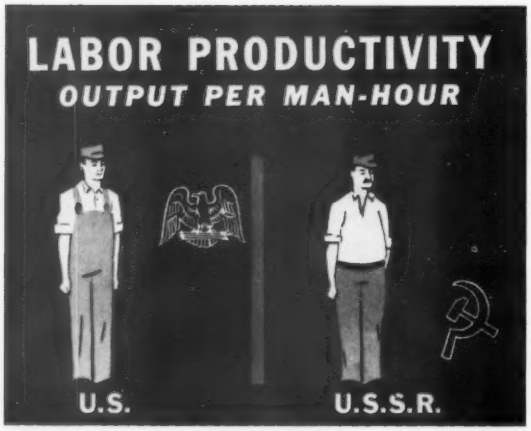


Figure 14

many electric conveniences. This is about half of what Americans use in the home for lighting alone.

What is the ceiling on Russia's arms production? Of course we do not know, but possibly we can get some idea from our own situation during World War II. For the sake of all-out war production we temporarily gave up part of our freedom, and the economy was run from Washington in much the same manner as a government-planned economy. We had government wage and price controls, production controls, allocation of materials, and restrictions of the freedom to change jobs in certain essential occupations. We were then devoting about 35 percent of our total productive capacity to arms production. If we could have produced more arms, we very likely would have; but people have to eat, they require clothes, and depend upon myriad other non-defense goods and services.

Is Russia's top limit 35 percent? I should think it is something less. About 50 percent of Russia's workers work on the farm. In America 17 percent of the civilian labor force worked in agriculture during World War II. About 8 percent of our present civilian workers are agricultural workers. In the light of our own wartime experience, it seems reasonable to say that Russia is somewhere near her maximum in arms production. On the other hand, we could handily treble ours if we chose to deny ourselves some of the conveniences and pleasures we now enjoy.

Comparative Rates of Growth

With this background let us examine the trends in the rate of use of electrical energy in the two countries.

Fig. 8 shows the use of electricity in the U. S. from 1912 through 1960.* Note that we are using a semi-logarithmic scale for this chart in which the same vertical distance in the upper part of the chart represents many more kilowatt-hours than the same distance in the lower part. A constant percentage increase on this scale would appear as a straight line. As the rate of increase in energy use has been more or less constant over the years, this scale will be convenient for our purposes.

On Fig. 9 is added the rate of increase in Gross National Product (GNP) for the same period. This chart illustrates that the use of electric energy in America has been growing at more than twice the rate of increase of the economy as a whole. Power capacity has been provided in advance to meet this rate of increase.

Fig. 10 shows the energy used in the U. S. through 1960, compared to the use in Russia from 1930 through 1960. During this period the energy growth rate in Russia was 10.4 percent per year. The EEI forecast for the U. S. to 1980 is shown.

The Institute forecast is our best estimate of the electric power requirements of the American people. This estimate is based upon the plans of the electric companies, formulated after considering local conditions and requirements in the various communities, countries, states and areas across our nation. The companies are continually making and revising forecasts of power needs in the areas they serve, to enable them to plan and build the required power facilities and reserves in advance of the actual need.

In Russia, goals are set. They are not forecasts in the sense of our projections.

Shown on the chart are Russia's goals for 1970 and 1980, announced by Khrushchev in 1959. In the past, Russia has failed to achieve many such goals.

The Russian technical journal *Vaprosy Ekonomiki* (Problems of Economy) in August, 1960, carried an article by M. Vilensky, who said " . . . We are still lagging behind the U. S. in point of electric power efficiency. . . . During the current seven-year plan the power output has been somewhat faster than the industrial output as a whole (1.22 ratio). In the U. S. in the past 20 years, from 1937 to 1957, industrial production increased 2.34 times, while industrial power consumption showed an increase of 5.29 times, that is 2.26 times as fast. . . . Despite the enormous increase in the power-producing capacity of the USSR as a whole, the electrification of its different areas is extremely uneven. . . . The major reasons for this . . . are the poor power production bases of many regions as well as inadequate systems of power transmission. . . ."

M. Vilensky lamented the fact that in Russia "the average capacity per thermal power plant in the country in 1957 amounted to only 330 kilowatts." He added, "The construction of very small rural power plants is particularly intensive. The average capacity of the plant built in 1955-57 was only 33 kw." According to a 1955 report, Russia then had 85 power plants of 100,000 kw and over. In that year we had 337 plants of that size.

Russian Trend 1945-1960 Compared to American Trend 1915-1930

There are four primary factors affecting the rate of increase in energy use.

- Increase in the number of customers.
- Increase in use per customer.
- Increase in electrification of industry.
- Increase in total industrial production.

We do not have accurate figures for Russia on the number of customers or classes of customers. However, we do know that the Russian transmission system is about one-fifth the size of the American system, while Russia's area is almost three times that of the U. S. Electricity is not widely available in the small villages and on the farm as it is here.

Russia is now extending service to customers who previously were without it much as we were doing during the period of 1915 through 1930. Also, Russia is electrifying industry now as we were doing in this period.

Fig. 11 shows America's rate of growth in energy use during the 1915-1930 period. During that time, growth averaged about 9 percent per year. If in 1930 we had used that trend in making a forecast we would have predicted 1,582 billion kwhr for 1960. If we had taken the trend between 1921 and 1929, we would have arrived at a figure of 2,468 billion in 1960. As our sys-

*Historical data are for contiguous United States only. Comparable data for Alaska and Hawaii are not available.

tem grew, its characteristics changed. Such change is an inevitable mark of progress in the development of a comprehensive power system.

In forecasting Russia's future power use we should avoid the error of ignoring similar changes which will likely take place as Russia's power system evolves from its present state.

Over the past 10 years or so, Russia has been on a war economy as far as production is concerned. We operated on a somewhat similar basis from 1938 through 1944.

During that period the rate of increase of energy use in the U. S. was 12.5 percent per year. If in 1944 we had made a forecast based on the 1938-1944 trend, we would have arrived at a figure of 1,924 billion kwhr in 1960, while the actual figure was 840 billion kwhr (Fig. 12).

During this time, we were building our war plant as fast as we could. Can Russia continue to accelerate its rate of production of arms? Not if, as seems to be the case, she is nearing the outer limit of what the total economy can stand in terms of percent for arms production. In forecasting Russia's rate of use of energy based on her 1945-1960 trend, let us not make the same mistake we would have made if we had forecast America's use of energy based on our 1938-1944 trend (Fig. 13).

Russia's trend line will likely change after Russia has extended service to all existing households and farms and when new customers added to the system are principally the result of population growth. The trend line will change further after Russia has progressed in the mechanization and electrification of industry as we have done here. Then the growth line, in Russia as it is here, will be influenced in the main by the development of new industries and the production of new things.

Defense Production Retards Living Standard

Military and defense production does not raise a nation's standard of living since the goods and services produced do not flow into the economy. On the contrary, such production tends to hold down living standards by draining the economy of the capital and labor in building products which are stockpiled or consumed in training exercises.

A number of factors enter into the American trend giving promise that it will remain high. For one thing, residential use is already high and is likely to go much higher. We are developing the equivalent of one and one-half new major appliances per year. The average American home with an average annual income of some $7,000 has invested in it $1,700 in wiring and appliances. With the use of 500 kwhr per year, the average Russian home must have a low investment in wiring and appliances. Compare the $1,700 with an average family income in Russia of only one-third of that in this country.

Our rate of growth in America has been and is influenced by aggressive salesmanship and promotional rates. There is no sales promotion in Russia except the selling of ideology, and electric rates are not promotional. The price of electricity in the home is the equivalent of a flat 4 cents a kilowatt-hour. Our sliding-scale rates offer a lower average price for all increased use and the price here averages slightly over half of the price in Russia.

After weighing all of these factors, it is my considered opinion that:

- The long-range electric energy use in Russia will be less than that in America.
- The gap between American and Russian use which has been widening will continue to widen, and therefore,
- Russia will not overtake us at any time in the foreseeable future.

No Cause for Complacency

Does this appraisal suggest we become complacent? Hardly. Russia is a threat to our well-being and our way of life. From the military standpoint, we are informed that America is prepared and ready to defend itself. From the economic standpoint, we should constantly appraise our position and be ready to make every possible advance and improvement.

Those of us who are responsible for the power supply should be alert in our search for new and better methods, and should constantly appraise future power needs so as to build the necessary capacity and reserve in advance.

There are those who feel we should make our economy grow at a higher rate. Naturally we want the economy to grow as rapidly as sound policy will allow. But when all power demands are met with satisfactory reserve, building additional reserve will not make the economy grow faster.

The $46 billion investment in the investor-owned power business now constitutes about 12 percent of all investment of all business enterprise in America. The $3.5 billion new investment per year constitutes 10 percent of all new investment for all business in America.

All of the power capacity to meet America's electric power needs (not just the 80 percent served by the investor-owned industry) could be financed in the free market. There is no need for the government to spend anything for America's power needs. This is something for Americans to ponder in light of the present high demands for government spending in other categories.

We may also reflect that the Cold War is with Russia where government owns all power facilities and all other machinery of production.

Why Is the Free Economy Production Greater?

The question is frequently asked: why does the free economy outproduce the government-planned economy? Cannot government plan the economy so as to increase production? Russia has the manpower and natural resources. Cannot the Russians, by decree, simply order their system to outproduce the American system?

This is a good point and we ought to think about it

(*Continued on page 237*)

The All-Electric Future

By J. K. Horton
President, Southern California Edison Co.

I BELIEVE in the all-electric future—not only for the sake of our sales curve, but also for the sake of the customers who will enjoy this better way of life.

I believe all companies have everything to gain and nothing to lose by joining an aggressive campaign such as the Live Better Electrically program to sell the concept of total electric living. Such a campaign means more healthy competition, more popular interest, more total sales for everyone.

What is *good* about our sales future—as I see it?

Happiest Development in Electricity

So far as I'm concerned, the Medallion Home program is the happiest development in electricity—from the sales point of view—since Ben Franklin took up kite-flying. In developing standards of excellence in wiring, lighting, and built-in appliances for Bronze Medallion Homes, and in setting up even higher standards for total electric Gold Medallion residences, the electric industry has rendered a service to builders as well as to the general public. For builders, it has provided a valuable sales tool, and for the public it has offered an easily recognizable hallmark of quality. In this connection, I want to give a brief history of our own success with this program, not to lay claim to any special genius on the part of our company, but to illustrate what the Medallion concept can do for any utility which throws its full weight behind an integrated program of promotion.

Before the Medallion program was launched just three years ago, construction of new electric homes in Southern California was negligible. Our territory traditionally had been "gas country." Obsolete wiring codes had permitted homes to be built with pitifully inadequate housepower. Plug in anything stronger than an electric razor—in many of these homes—and you blew a fuse. Our pell-mell residential growth had led to so-called hidden economies, such as minimum wiring, which added up to important money when spread over thousands of units in tract developments, but added up to nothing but headaches for the unfortunate purchasers of these homes.

This was rough country in which to launch a Medallion program. But if the terrain was difficult, the potential was great. Housing was mushrooming, with more new starts than anywhere else in the country. Time was vital, because each new home completed with inadequate wiring was one more home removed from the market for heavy electric appliances.

Starting from a narrow beachhead in this rocky territory, just three years ago, the Medallion program has spread and taken root with spectacular success.

During 1960, as a direct reflection of the Medallion program, our company experienced the largest increase in residential consumption in its history. About one out of every four Medallions issued in the country was in our service territory—and 25 percent of all new dwelling units authorized by building permits in our territory were planned to meet Medallion standards.

Medallion Home Success Story

I am sure that a Medallion Home success story is not unique with our company. Many other companies undoubtedly have enjoyed successful experiences with the program. Its success is due, I feel, to its fundamental soundness and good sense. My point in relating our own experience is to show that this program works, and to urge that, if any companies have *not* jumped into the Medallion campaign with both feet, they do so quickly.

A broader conclusion to be drawn from the success of the Medallion program is simply this: good salesmanship and sound marketing policy still pay off.

This sounds like a trite idea, but it is one that has been largely overlooked ever since the end of World War II. During the war, when we had rationing coupons for everything from gasoline to meat, service station attendants learned to ask cautiously, "How many?"

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 6, 1961.

instead of "Fill 'er up?" Butchers measured out the hamburger without bothering to ask, "How about a nice top sirloin steak?" Auto dealers jacked up their prices, demanded low trade-ins, and moaned about the shortage of cars. And electric utilities, faced with a shortage of appliances, found little incentive to push appliance sales.

But this sellers' market, created by war scarcities, was not the only cause of death in the demise of salesmanship.

Marketing Revolution Since the War

Since the war, there has been a revolution in marketing—much of it due to the growth of television. The pre-sell replaced the hard-sell, and mass demonstrations of products took the place of door-to-door display. As a result, the retail dealer and his salesmen were reduced to the status of order-takers.

After all, how many salesmen could look like Betty Furness, opening a refrigerator door? And why ring doorbells to demonstrate a product when you could show it to 20 million people at once on television—aided by glamour lighting and sex appeal?

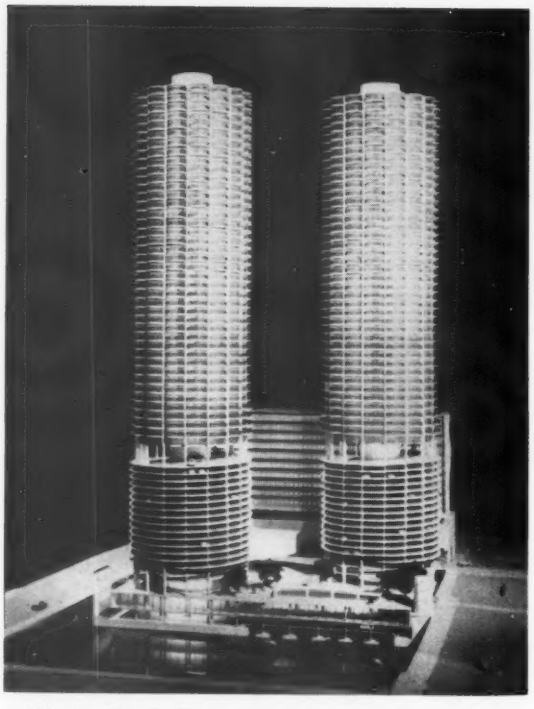
Furthermore, saturation campaigns in the mass media developed a more knowledgeable and sophisticated type of consumer. Relaxing on his sofa at home, with a cool drink in his hand, he could weigh the arguments for competing products at his leisure, between vaudeville acts on the Ed Sullivan show. By the time he visited a retail store, he usually knew what brand he wanted. So all there was left to shop for was price. Again, this tended to downgrade salesmen into order-takers, and boosted the trend toward self-service discount stores.

Surveys indicated that, in the automobile field, three out of four customers had chosen the make they would buy before entering the dealer's showroom, and only 2 percent of these pre-sold buyers changed their decision after shopping.

Under these conditions, the old hard-sell didn't work any more—in fact, it only served to arouse irritation. It appeared to many that selling was doomed to become a lost art, and its practitioners relegated to the limbo of blacksmiths and buggy-whip manufacturers.

But this was a surface illusion. Selling was not dead; it had merely changed its form, and the really *good* salesmen intuitively recognized this, and shifted with it. Instead of the high-pressure hard-sell, they developed a low-pressure soft-sell that didn't clash with the customer's pre-sold convictions. The first thing they sold was themselves, so the prospect felt the most important thing was to make a favorable impression on this warm new friend. If they couldn't sell a product, or a brand, they sold friendship—and the prospect of a continuing pleasant relationship in follow-up service on the item purchased.

Once they established this relationship, they found they *could* manipulate the buyer's preferences in future sales—because until Betty Furness steps down out of that TV screen and sits on your lap on the couch, tele-



"Marina City," all-electric apartment building rising in Chicago, will have 900 Gold Medallion apartments.

"Electric City," in New Jersey will have 6000 Gold Medallion homes, as well as 5000 apartments.

In Southern California, there is the all-electric walled city of Rossmoor, which has 3500 Medallion homes.

vision, for all its wonders, cannot quite compete on equal terms wtih personal contact.

What I'm saying is this: salesmanship is not dead, salesmen do not have to become mere order-takers, and now that we are back in a buyer's market, the need for high-quality selling is greater than ever.

So far as competition is concerned, we are in it up to our steam stacks. In selling electric living, we are first of all competing with other sources of energy, such as gas; and secondly, we are competing for our very existence with government-owned utilities and federalized power.

Industry Must Sell Ideas

In other words, the electric utility industry must sell not only products and services, but also ideas and ideals—everything from heat pumps to free enterprise. It is impossible to lay down firm rules for covering this broad spectrum. We must remain flexible and alert. In general, it may be said that the soft-sell, or subtle sell, has replaced the old hard-sell at the consumer level, just as the old-fashioned melodrama has been replaced by more realistic drama in our theaters. People's tastes have changed; they have become more sophisticated. They resent having their intelligence insulted.

But there are areas, still, where the exigencies of time and fierce competition require an extremely hard-driving, if not high-pressure, attack. I am thinking, for example, of the competition in our own area to sign up Medallion builders—to convince them, against intense competition, that their own self-interest demands that they go all-electric in their housing tracts. Most builders are not pre-sold. They are open to the best argument, and the best offer.

The Medallion program has provided a dramatic illustration of the effectiveness of our banding together to stage a coordinated, nation-wide mass attack on a given objective. It has been only a few decades since salesmen went from door to door, demonstrating the electric iron, the washing machine, the vacuum cleaner, and other appliances.

Then we discovered we could sell electric appliances in groups. The idea of an all-electric kitchen was developed, and people began hearing about all-electric laundries. The next logical step was the all-electric home, and the Medallion campaign provided the necessary impetus to put this concept in orbit. Finally, we now have all-electric Gold Medallion communities—another logical extension of the same idea. Here the schools, churches, shopping centers, and factories all become part of the Gold Medallion concept.

What are some companies—in various parts of the country—doing in this field?

In Bellevue, Wash., there is the Somerset Gold Medallion Home project—3,500 houses built to Gold Medallion standards through the efforts of the Puget Sound Power & Light Co.

In Sarasota, Fla., there is the Gulf Gate project—1,500 Gold Medallion homes built under contracts with the Florida Power & Light Co.

In New Jersey, there will be 6,000 Gold Medallion homes and 5,000 Gold Medallion apartments—a total of 11,000 Gold Medallion residences. This proposed development, officially named "Electric City," is an outstanding achievement of the Jersey Central Power & Light Co.

In Chicago, there is "Marina City," 900 Gold Medallion apartments built under contracts with Commonwealth Edison Co.

In St. Charles, Mo., there is "Mark Twain Homes," 148 Gold Medallion homes contracted by Union Electric Co.

In Atlanta, there is the 23-story "Merchandise Mart," an outstanding achievement by the Georgia Power Co.

In my own territory of Southern California, we're proud of projects like the walled city of Rossmoor—an electric community of 3,500 Medallion homes, all completed, sold and occupied.

And in the same area, the same builder has begun work on an electric community for senior citizens, which will consist of 6,700 Gold Medallion apartments, along with an all-electric shopping center, medical facilities, and many other features aimed at making life convenient and comfortable for older people.

All this sounds pretty impressive, doesn't it? These accomplishments are a credit not only to the utility industry, but also to our manufacturing allies in the Medallion Home program—the people who actually make the myriad electrical servants which have opened the door to modern electric living. And before we remove our rose-colored glasses, let's complete the optimistic side of the picture.

The amount of electricity available in this country has been growing at a rate of 8.6 percent per year—two-and-a-half times the rate of growth of the whole economy. Again, this sounds pretty good.

There are now at least 168 practical appliances that can use electricity in the home: everything from refrigerators to electric toothbrushes. This, again, sounds like music to our meters.

Sales opportunities in agriculture are equally great. While the number of farms is *decreasing*, their size—consequently—is *increasing*. And so is the farmer's need for automation.

Modern Farmer Sold on Electricity

The modern farmer is sold on electric power. In many cases, it provides the only means of survival in an area of constantly rising labor costs. While these costs have risen 400 percent in the last 20 years, the average kilowatt-hour rate for electricity has decreased 25 percent. The EEI figures from a nation-wide survey indicate that today eight cents worth of power does the equivalent work of eight dollars in manual labor.

Although the use of electricity on the farm has more than doubled in the last 20 years, we still have a long way to go in realizing our potential. One of the biggest areas for improvement is in automatic feeding. For example, many new and otherwise modern dairies still are hand-feeding their cows.

With properly designed electric equipment, one man

can handle at least 100 cows a day—including feeding, washing, and milking them morning and evening. One farm in our territory has pushed production even higher with a kind of horizontal escalator which works like one of those three-minute car washes. Cows are herded in at one end, and come out at the other completely washed, milked, and—presumably—happy to be living better electrically.

We no longer have barns, we have "milking parlors," complete with soothing music and red lights that blink when a cow has been properly milked. As a farmer explained it to one of our people, the red light enables him to "treat the cow as an individual."

Automated Poultry Farm

Another California farmer devised what I understand was the first completely automated poultry farm, on which he alone can take care of 30,000 chickens. In his feathered version of the Medallion home, the chickens are left with no decisions at all—except when to lay an egg. And he's working on that.

Once installed in their all-electric homes, the chickens are not only watered and fed automatically, but even the eggs they lay are electrically gathered. Furthermore, the area beneath their pens is electrically cleaned, which eliminates perhaps the largest single drawback to the profession of poultry raising.

This poultry farmer is now in the business of designing this automatic equipment, and I believe there are now three similar poultry farms—the forerunners, perhaps, of a nation-wide trend.

Our agricultural department also has been working with Southern California farmers to help develop a system of growing tomatoes in the wintertime under plastic tents, using heat pumps to control both temperature and humidity. Under this system, moisture given off by the plant is condensed and used to help irrigate those same plants.

Also, donations from electric utilities in our area are being used in a research program aimed at developing a conveyor-belt system for crushing grapes to make wine. The juice is said to be of better quality because the pulp of the grapes is carried away before imparting a bitter taste.

This is one of the first innovations in an industry which hadn't changed much for 50 years, except perhaps for eliminating the barefoot method of grape-crushing.

At the same time, horticulturists are working to develop a long-stemmed grape which can be harvested automatically.

These are but a few examples of the growth of automation on our farms. The farmers themselves are proving ingenious in finding new ways to adapt electricity to their needs. All we need to do is work with them and help them find solutions which will be profitable for all concerned.

The trend toward automation is growing, also, in the commercial and industrial fields. Former luxuries like air conditioning, for example, are becoming almost universal. In the huge shopping centers springing up throughout the country, we have wide-open markets in commercial cooking, escalators, and a multitude of other uses for electricity. So far as factories are concerned, the trend to automation is too well known to require elaboration.

Taking a cue from the nation-wide success of the Medallion Home campaign, our own sales department recently developed what it calls an "All-Electric Building Award Program." Its aim, of course, will be to promote greater acceptance of the all-electric concept by the designers, owners, and operators of commercial buildings.

We are pleased to note that a number of our people in the industry also are interested in such a program and already are at work developing a distinctive identifying insignia which, like the medallion, will be installed as a guarantee of the highest electrical standards of convenience and comfort.

Still another field in which we have by no means reached our sales potential is in commercial and street lighting. Research statistics have demonstrated clearly that as foot-candle illumination goes up in our office buildings and factories, there is a corresponding increase in efficiency. And as illumination is *increased* on the streets of our cities, accidents and crime are *decreased.*

The examples I have cited barely scratch the surface of our sales potential. Each of us, within his own company, needs to ask the question: "Are we doing a complete selling job?" Have we enrolled all our employees —not just the sales personnel—in the job of selling electric living? Have we asked our stockholders to help promote the all-electric concept? Are we working with manufacturers to help stimulate production of the best possible electrical appliances to meet the special problem of the householder, the business owner, and the farmer? Are we exerting enough effort in developing qualified and creative salesmen?

In pushing ahead with new programs, I hope we won't be discouraged by mistakes. When progress is being made, mistakes are inevitable. My plea today is simply this: if we must make mistakes, let us make *new* mistakes, not old ones.

The Competitive Struggle

We have already indicated that the electric industry is involved in a fierce competitive struggle—first with other sources of energy, and second with government-owned utilities. How well are we doing in a competitive sense?

First, what percentage of the nation's disposable income—after taxes—is going into electrical products?

In 1950, the electrical appliance industry took 3.3 percent of this disposable income, as compared with 13 percent for the auto industry. The electric share was one-tenth of one percent *less* than the amount going for barber and beauty shops, liquor and tobacco.

By 1960, the electric share had dropped even lower, to 2.5 percent.

This decline occurred despite the fact that better bargains were being offered in the appliance market than ever before. For example, 10-cubic-foot refrigerators cost less than $200—50 percent less than they cost during the depths of the depression and, of course, are much better machines than the earlier models.

Can we attribute the relatively low percent of the disposable income going to electric appliances as being due to a saturation of the market? Well, hardly.

As of 1960, on a national basis, about 65 percent of the families which had electricity available were still using flame-type cooking equipment; 81 percent were using a flame-type water heater; 93 percent had no dishwashers; 57 percent didn't have electric frypans; and 76 percent were not enjoying the inexpensive luxury of an electric blanket.

Need for Better Salesmanship

Does this sound like saturation? It seems to me there is a critical need for more and better salesmanship.

What about the quality of that salesmanship, and of sales *leadership* in the higher echelons?

In a recent survey of a variety of industries by Opinion Research Corp., out of 1,209 salesmen polled, only 15 percent replied "yes" to the question: "Do you feel you have a very thorough grasp of your company's over-all marketing and sales strategy?"

Only 25 percent of the same group rated their company "very well planned" in the sales field. And when asked the question—"How well do you think the men in top sales management in your company understand the problems you face in today's market?"—only 25 percent were in the category labeled "very well."

In other words, almost three-quarters of these salesmen weren't too sure their bosses really knew what they were talking about.

This was a survey covering a number of industries, and was not concentrated on the electrical field. But how much reason does each one of us have to believe his own company would rate better—that's the question we each need to ask ourselves. Is your top management giving enough attention, on a continuing basis, to over-all marketing strategy?

It seems clear that increasing our sales activities will mean spending more money. In 1937, the nation's electric companies were spending about 2½ cents of every dollar of annual gross revenue on their sales programs. But for the past 10 years, this figure has dropped to a little less than 1¾ cents of every dollar.

During the past year, many companies have curtailed promotional and advertising expenditures because of the recession. This is the time when we need to hit harder on our sales programs.

The situation may have been roughly comparable with the story of the man who opened a small restaurant serving nothing but hamburgers and hot dogs. They were the largest and best in the country. As the business grew, he put up large signs—electric, of course—and advertised extensively. And the business prospered. It prospered so much that he was able to send his son to one of the leading universities, where the boy specialized in business administration and economics. On graduation, the son returned home and informed his father that a recession was imminent, and that he should take proper steps to protect his business and conserve his assets.

In speaking of the situation later, the father said: "I asked my son to review the entire business and tell me what to do. He suggested that we save the money we'd been spending on signboards by eliminating them; that we cut down the size of our hamburgers and hot dogs; and that we lay off part of our help. I took his advice, and I am now a great believer in college education because, by golly, my boy was right—we *did* have a recession."

In reviewing our sales effort, we need ask ourselves, also, how we're doing in selling our rate story to consumers. One of the most common complaints we hear from our customers is that their bills are too high, yet electricity is probably the biggest bargain in the household budget, and has yielded the least to inflation. In the case of my own company, it has had just two general rate increases in 30 years, and rates are lower now than they were 20 years ago. I imagine this is typical of electric companies throughout the country—yet we still find ourselves on the defensive, and being apologetic.

Finally, how are we doing in our competition with government-owned power? The increasing encroachment of socialized power into our industry offers menacing evidence that here, too, the story has not been sold effectively to the public. Of this problem we are all very much aware.

One more point remains to be touched upon in attempting to envision the all-electric future: research, which, freely translated, means "where do we go from here?"

One thing is certain regarding research: we, the electric industry, must do it *first*, and *best*—and we can't afford to let our competitors, the producers of alternative sources of energy, take the initiative away from us.

For example, right now the field of direct energy conversion is being researched furiously by producers of natural gas, fuel oil, and coal, among others.

A Tendency to Resist Change

There is a natural tendency for us to resist change, because it is inconvenient and often expensive. But if we go to sleep here, it may be the sleep of death.

In my own territory, we are even now being hysterically threatened with extinction by the local gas companies, which are running a series of full-page newspaper ads telling how they intend to take over our business with fuel cells. Each householder is to have a little blue flame in a fuel cell on the back porch, silently ticking off his electrical needs.

Our position on do-it-yourself electrical generation is "why buy a cow when milk is so cheap?" and "when better and cheaper methods of generating electricity

are devised, we, the electric industry, will devise them and pass them on to you, the customer."

Now, let me add quickly that there will be others who will be quite willing to devise these better methods of generation if our industry does not do the job. If we leave the energy door open, others will rush in to fill the vacuum because we are really in the energy business—not the electric business. I am sure most of you have read Theodore Levitt's article in the *Harvard Business Review*, entitled "Marketing Myopia." He points out how many industries have declined simply because they believed that growth was assured by an expanding population, and that there was no substitute for the industry's product or service.

Let me conclude as I began—with a firm belief in the all-electric future. But let us remember this—while the future will be all-electric, it will take all of our ingenuity and perseverance in the field of research, in the field of marketing, and in the area of practical politics for the investor-owned industry as presently constituted to maintain its role in that great future.

The EEI's Expanded Research Program

(Continued from page 186)

technical committees and also to find out whether our thinking is in line with the desires of the Institute membership.

In considering this matter, one must constantly bear in mind that $600,000 is a very small figure for an industry as large as ours. I do not mean that we ought to increase the figure other than by adding to the participants, but I do suggest that the figure by itself places a definite limitation on the kinds of things we can get into.

On the basis of my limited knowledge of the subject today, my thinking is along the following lines. If I state our policy, as I see it, on the basis of what we ought not do to a greater extent than on the basis of what we ought to do, it's because it's easier to state that way.

First, our committee is of the opinion that we ought not provide fellowships and broad research grants to engineering schools. We are unanimously in agreement that educational contributions as such should be made directly by the member companies rather than indirectly through EEI.

We do, at present, have projects which are being handled for us by five universities: Michigan, Massachusetts Institute of Technology, Johns Hopkins, Cornell and Purdue. In these cases, however, we sought out the institution as being the best-qualified to do a particular job. So far as I know, there was no thought to select them in the interests of aid to education.

Second, we feel that the Institute itself ought not to undertake to support, either wholly or partly, the general research programs of a particular manufacturer. If the Institute were to become involved in projects of this type, there would be no way to determine where to begin and where to end. This does not mean, of course, that individual companies or groups of companies should not do so, as in the case of the Avco MHD project.

Third, it does not seem practical to get involved in projects where our efforts would be no more than a drop of water in the ocean. Research on fusion would be a case in point. I am not sure that our project on heat storage may not be of this type, although a number of our member companies are excited about it, and, of course, if anything could be accomplished, it would be very helpful indeed.

Fourth, it is a tradition of our industry that product research should be carried on by the manufacturers. It follows that the Institute, as a general rule, should not engage in product research. However, there are cases where our industry needs specialized equipment for which the market is too limited to attract the interest of one of the manufacturers. A recently approved project to develop an instrument for measuring the opacity of stack plumes is an example.

Fifth, a further criterion should be that our projects are of interest to a broad cross section of our industry. We have projects on air pollution and also fly ash and slag disposal. Most of our members have problems in these areas.

I shall refer briefly to the manufacturer anti-trust cases.

I have heard it suggested that our industry may suffer in terms of the research which will be carried on in the future by the companies we have relied on in the past for a major part of our technological progress.

Although I have no doubt that the individual companies in our industry are taking their responsibilities very seriously—I know mine is—I have not heard of anyone who would like to change our traditional pattern of having our apparatus research done by our manufacturing suppliers. I don't think it will be.

Live Better Electrically

By W. M. Shepherd
Vice President in Charge of Sales, Arkansas Power & Light Co., and Chairman, EEI Live Better Electrically Policy Committee

WE who live so closely to electricity and the selling of kilowatt-hours sometimes forget that the vast majority of people think of electricity in terms of wall switches, thermostats and wall plugs, not bothering to understand it, only realizing and appreciating that it is always right there at their fingertip.

One of the Best Bargains

Electricity is one of the best bargains yet. Here is a progress report on the Live Better Electrically program in this, the third year of its sponsorship by EEI. The LBE program is the national advertising and promotion program of the electric utility industry. One hundred and thirty-nine EEI member companies—two-thirds straight electric and one-third combination—contribute $2.5 million to sell more residential kilowatt-hours to all of our customers by advertising specific competitive equipment in terms of the total electric living concept. The program aims to sell electricity as an energy source in competition with fuels.

The LBE program was launched as a national advertising and promotion program by the General Electric Co. in 1955. This was undertaken on behalf of the electric industry to acquaint the public with the facts of a totally new way of life—the all-electric way. Utilities and other manufacturers were encouraged to participate—many did. After four years and an expenditure of $9 million, General Electric withdrew and turned the program over to the investor-owned electric utilities. 1959 was the year of transition. In the two and a half years of EEI sponsorship, great progress has been made. We are making even greater progress in 1961.

Three committees run the LBE program: the Policy Committee, representing both combination and straight electric companies, setting the general direction for the activity; a Planning Committee, which carries out the directives of the Policy Committee; and a Copy Review Committee. The Live Better Electrically staff consists of 12 men and women, and this staff works in daily conjunction with our advertising agency, Compton.

Early in 1960, Live Better Electrically undertook a comprehensive motivation study of American householders in 11 markets scattered around the country. The idea behind this remarkable study was to find out whether the housewife really wanted more appliances and, if so, what psychological factors kept her from buying them.

Each woman was asked this question: "What does *modern living* mean to you?" Sixty percent said it meant *modern appliances*, either gas or electric. Far down the list come modern homes, new car, jet airplanes and wonder drugs. It seems clear that the housewife *wants* more appliances and is remarkably receptive to our sales presentation.

What 'All-Electric Living' Means

The housewife was also asked what "all-electric living" means to her. This term has a *clear meaning*. To most consumers it means: (Fig. 1).

- Many electric appliances.
- A highly desirable, pleasing idea.
- Comfortable living, modern living.

But to many consumers, one out of three, it means an expected high price tag.

This factor of the high cost of appliances and electricity crops up time after time. But how important is it, really? "Cost" is a prime factor only when motivation is weak. The most powerful motives are the end benefits of owning and using appliances. The job for us who sell appliances and electricity is to provide a motivation strong enough to overcome this adverse cost factor.

Here's what some housewives said. They speak for 75 percent of what we call "middle majority"—those whose family income is between $4000 and $8000:

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 6, 1961.

This Live Better Electrically ad, illustrating that electric house heating is really clean, was cited by *Advertising Age* magazine as one of "top 10 advertisements of 1960."

Look how clean flameless electric house heating keeps the modern home

Already more than 850,000 families in every part of the nation are enjoying the clean comfort of truly modern heating at lower cost than most people believe possible

YOU LIVE BETTER ELECTRICALLY

- "I *want* to work at housekeeping. I happen to think it's important in holding the affection and respect of my husband and my children."
- "I'm not sure I'd know what to do with more leisure time!"
- "Believe me! My husband isn't one bit sold on the modern emancipated woman!"

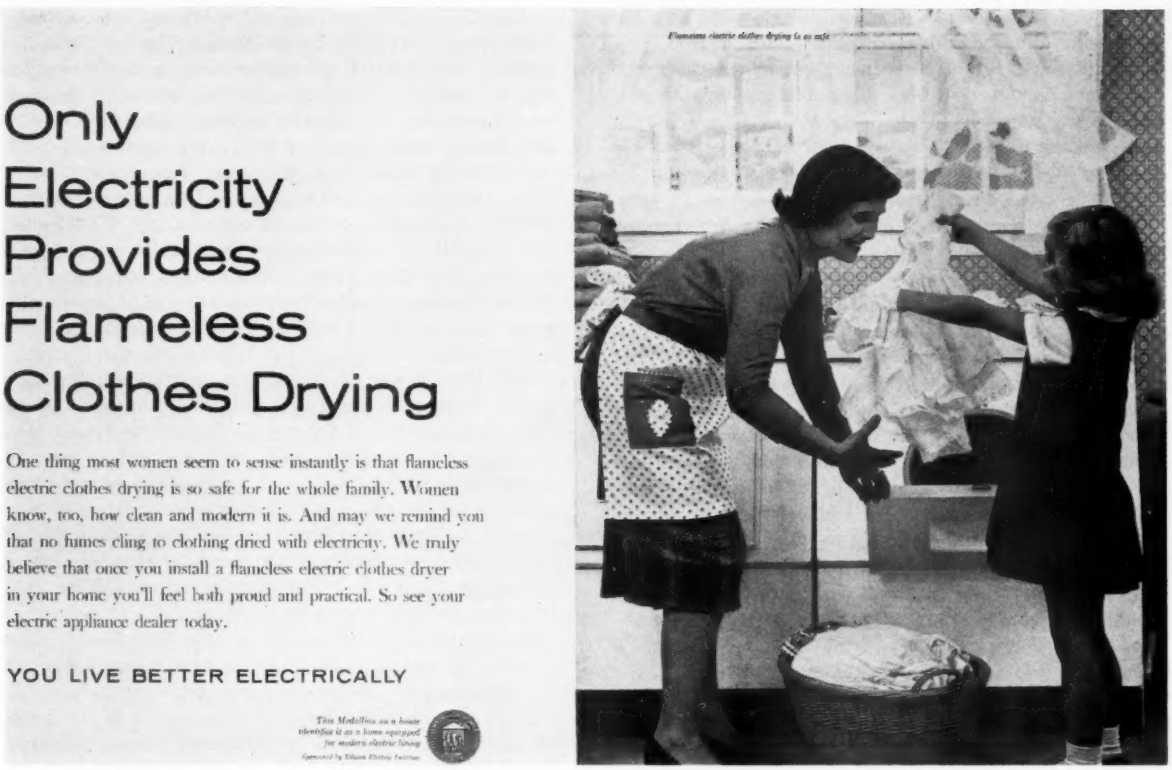
If we probe deeply into the woman's mind, we discover that she is greatly concerned about working as hard as her husband does, carrying her full share of the family burden. She admits that she wants more and more appliances to ease her hard work and reduce her hours of work. But she holds back from buying appliances if we who advertise and sell them make it appear to her family that the woman with a houseful of appliances has nothing to do. She is *not* lazy and does not want to appear so! Instead of simply pampering her, we must show that appliances benefit her family by giving them a cleaner, more healthful, more efficient home. She knows and we must recognize that the man of the house, who makes the buying decision, will overcome his price objection to new appliances if he believes that these appliances are good for his wife, himself and his children.

The two-page ad, below, is one of those selling the concept of a better way of life through total electric living. Similar Live Better Electrically ads are appearing in *Life, Better Homes & Gardens,* and *The Saturday Evening Post.*

"We just love the cleanliness of our flameless electric house heating"

The Nelson Thomassons, of County Line Road West, Barrington, Illinois, are among the 850,000 homeowners who proudly enjoy the clean comfort of electric heat in their total electric Gold Medallion Home.

YOU LIVE BETTER ELECTRICALLY


Only
Electricity
Provides
Flameless
Clothes Drying
One thing most women seem to sense instantly is that flameless electric clothes drying is so safe for the whole family. Women know, too, how clean and modern it is. And may we remind you that no fumes cling to clothing dried with electricity. We truly believe that once you install a flameless electric clothes dryer in your home you'll feel both proud and practical. So see your electric appliance dealer today.
YOU LIVE BETTER ELECTRICALLY

This 1960 electric dryer ad was the highest-rated appliance ad tested in 10 years by Compton Advertising. Fifty-five percent of the people interviewed in a survey were able to recall, unaided, a specific selling point of the Live Better Electrically ad.

Thus, our LBE ads must not show girls on their way to cocktail parties, but believable women using their appliances for the benefit of their families. This, then, is the secret of slanting our sales approach—giving the woman and her husband the strong emotional family rationalization for investing in new appliances.

The next question is: "Shall the new appliance be electric or gas?" The American family isn't one bit afraid of competitive facts; they want them, look for them, study them—then make their buying decision. So, we had our researchers ask for definitions of the personalities of electricity and of gas. Remember, effective selling and advertising depend completely upon our ability to define the difference between competing products, the consumer benefits that are exclusively ours, that set us apart from competition. This exclusiveness is the key to our entire effort.

Here's what electricity means to the public:

- Key ingredient of our way of life.
- Unlimited future benefits.
- Streamlined, comfortable living.
- Clean.
- Luxurious, pleasurable.
- Electricity is a mystery few care to understand.
- And it's expensive.

All in all, electricity is accepted as a wonderful part of our present and future life. But, of course, here we encounter again the problem of price—the problem we must overcome.

By contrast, here is what gas means:

- Minor place in our way of life.
- Limited future.
- Functionally less efficient.
- Old-fashioned (but lots of housewives want to be old-fashioned, to cook over a flame as their mothers did).
- Easier to understand (electricity is a mystery; the flame of gas is understandable).

Now we come to the rationalization of those people who cook on gas stoves: gas is a less costly substitute for modern electrical living. For the third time, the housewife has mentioned the high cost of electricity—the price deterrent we must overcome.

Thus, the conclusion of our basic research: the total movement is strongly toward more electrical living. Some consumer groups are moving less rapidly toward total electrical living—these are gas users. But gas-range owners have only slightly fewer electric appliances than those who cook with electricity—showing clearly that, if they can find a motivation that over-

comes the price factor, they would eagerly join the total electric living ranks.

In summary, we learned these important things:

- Our ads must be believable, picture a believable mother using an electric appliance to benefit her family.
- And the ads must draw a distinction between gas and electric appliances, giving the family a reason for buying electric over gas.

For example, a wholly believable ad, in our opinion, would show a genuine, real-life family, identified as such, right down to name, address and town. This family lives in a total electric Gold Medallion Home.

Our key word is "flameless." We asked ourselves, "What exclusive benefit for *electricity* can we put into the shopper's mind?" The answer: *"flameless."* The LBE program sent researchers out into the field to test this, to determine the attitudes and interpretations of housewives. Our report immediately showed that these were the meanings of "flameless"—Clean, Safe, Modern.

Thus, it appeared that the LBE program had isolated a word that might set electricity apart from all other types of energy—the exclusive consumer benefit which is the key to good selling and advertising.

Here are sample interviews which took place after housewives had read Live Better Electrically ads.

Interviewer: "Mrs. Johnston, you've been very helpful to us thus far. I wonder if I might take a few more minutes and ask you for a definition of the word 'flameless'?"

Mrs. Johnston: "Why, of course! 'Flameless,' I guess, means just what it says: no flame. And . . . that means *clean*, no soot. And, being flameless, electricity won't scorch or dirty the bottoms of pots and pans or put grime on the walls. And, of course, it means *safe!*"

Interviewer: "What would you say is the difference between electricity and gas?"

Mrs. Johnston: "That's easy! I know the difference as well as you do: with electricity you use an element —not a flame."

Interviewer: "Thank you, Mrs. Johnston, we certainly. . . ."

That's just exactly how it goes. The American housewife knows the difference between electricity and gas just as she knows the difference between a jet aircraft and a horse-drawn buggy! The word "flameless" is the key that brings to the surface all the good things about electricity. I say the *good* things because in a survey of our 1961 appliance ads there was not a single negative about "flameless." Everything was positive. The three most important things in this order were:

1. No flame/flameless.
2. Safer.
3. Heat with element instead of flame.

So, we've got a world-beater with our word "flameless." We don't have to explain it for the housewife; she can do it herself. And everything she thinks is positive. We don't have to say "safe." The housewife says it for us. All we have to do is to continue to hit that word "flameless," always tying it to a family benefit.

There's another method of testing our ads: *CSMI*—that means Compton Sales Message Index. This is a method developed by our advertising agency more than 10 years ago. It does far more than measure the number of readers, the number of people who may remember having seen an ad or the measurement of traffic through the pages of a magazine. This method measures "the communication of ideas." Companies such as Procter & Gamble use this system; in fact, P&G insists that all of its several advertising agencies use the same system. New York Life Insurance Co., the New York Stock Exchange and others of that caliber use this same system. And we of the LBE program have the unique boast that our ads are setting records.

Our 1960 dryer ad was the highest-rated appliance ad tested over the last 10 years by the Compton system. Fifty-five percent of the people interviewed were able to recall, unaided, a specific selling point in our ad. Along these same lines, it is interesting to note how "idea" ads (in contrast to branded product ads) registered the central selling themes. The median for all ads tested is 8 percent. This means that 8 percent of the people could recall the specific central selling idea. In our dryer ad, nearly twice as many—15 percent—were able to play back specifically the Live Better Electrically "flameless" idea. This is one measurement of the effectiveness of our copy and art approach.

Let's play back the major selling points in our dryer ad. Housewives recalled six different selling points in our ad: Flameless; Leaves clothes fresher; Safe; Doesn't scorch clothes; Economical; No fumes.

It is interesting that some people mentioned that flameless electricity doesn't scorch clothes—although there was no reference whatsoever to scorching in the ad. Perhaps this suggests the effectiveness of the word "flameless" in bringing thoughts into the reader's mind, even thoughts that are not written into the ad. All in all, this would seem to be a very hard-working, highly effective ad.

You probably have seen already our 1961 electric clothes dryer ad. You'll be seeing it again, and so will

"ALL ELECTRIC LIVING"
has clear meaning to most consumers
• MANY ELECTRIC APPLIANCES
• HIGHLY DESIRABLE, PLEASING IDEA
• COMFORTABLE LIVING, MODERN LIVING

Figure 1

millions of American housewives. This ad uses the same thoroughly researched format: a family scene, with mother using the electric clothes dryer for the benefit of her family—an emotional motivation to overcome the father's price resistance. And the word "flameless" sets the electric clothes dryer apart from other kinds—the exclusive consumer benefit which makes our advertising work.

What about electric house heating? The kind of response we got some 18 months ago, when we researched the subject, was: "Well, what about electric house heating? My land, I've never even *heard* of it!"

The majority of people in this country was totally unaware of electric house heating. It's the job of advertising to let the people know, and it was right along these lines that we developed the campaign that started in 1960 and will continue throughout 1961. Live Better Electrically and Compton representatives went out in the field, talking to people who live in electrically heated homes, learning firsthand what they liked best about it. In nearly every case, women remarked voluntarily about the *cleanliness* of electric house heating. They pointed to such natural dust catchers as venetian blinds and noted that they stayed cleaner longer. Therefore, Live Better Electrically focused down on this benefit—cleanliness—and developed a new heating campaign, using the art and copy elements practically dictated by the housewives.

Venetian Blind — No Dust Catcher Here

Here is that campaign. Picture the natural dust catcher—the venetian blind. A woman's hand touches a lacy, snow-white handkerchief to the blind to dramatize the cleanliness point. The cut line, headline and copy focus on the clean, electrically heated home. Thumbnail sketches at the bottom show the different kinds of heating equipment. In a very real sense, this artwork and copy tell exactly the same story that the housewife has told us about electric house heating.

Referring to the "venetian blind" ad (see page 218), *Advertising Age*—the trade magazine of the advertising business—cited this ad as one of the "top 10 of 1960." It puts us in good company. It scored a 33 percent related recall and when we consider that the median for this type of ad is 24 percent, it can be seen that our central selling theme scores well in communicating its principal idea. Virtually all of the women who recalled the ad played back the central idea: "Electric house heating is clean."

Last March in Chicago it was proposed and approved that the Live Better Electrically staff go ahead with a research project which will take interviewers to 15 markets around the nation, so that we may make an even further probe into the likes and dislikes of people in terms of electric house heating. We want to measure their awareness, their attitudes toward costs, their reactions to electrically heated homes they may have already seen. We want to know why they bought electrically heated homes—and just as importantly, why they didn't. The results of this body of research will influence the direction of our 1962 advertising on this subject. We know we have a good property in our current advertising approach. We'll now see if there's some way of making it sharper, more effective, more profit-producing for all of us.

Now we turn to the total electric Gold Medallion Home. Let's never forget *what we are selling* in our Gold Medallion Home advertising. First, foremost and always we are selling a *concept*. We are selling the concept of a better way of life through total electric living, in a Gold Medallion Home (See page 218).

Highly Convincing Manner

We sell this concept of total electric living in a believable and highly convincing way. We sell—in our advertising—through actual families now enjoying the benefits of living in total electric homes. These families are our spokesmen. They are from Connecticut, Indiana, Florida, California, Illinois, Texas, Arkansas and Pennsylvania. These are real-life families now living in Gold Medallion Homes. They are our spokesmen in the series of Gold Medallion Homes that are now appearing in *Life, Better Homes & Gardens* and *Saturday Evening Post*. I say "spokesmen" because the enthusiasm we have encountered among these people is such that we have absolutely no trouble in using their own words.

Mrs. Jack Strome of Florida said, "We moved to Florida about nine years ago and don't think we don't have cold snaps down here. We've been in this house for two years, and we find a world of difference between our heat pump system and the oil heat we used to have. Why, the boys, particularly, always running in and out, had chapped lips; everything in the house would turn dry. I had much more of a cleaning problem than I do now. For comfort, you certainly can't beat electric heat. With the air conditioning, we get year 'round comfort and I'm delighted with the whole pattern of electric living!"

And on the Pacific Coast, Mrs. Harry Brummett of California said, "My husband built this house with his own hands. We've got electric heating all through the house. And I can truly say that we love it. It gets mighty chilly here in Southern California. My real joy is the electric range. We've got built-in ovens, the whole works. It's so easy to keep clean. The gas stove I used to have was a day's work at least once a month, and I mean a day's work—not just an hour or so. I'm sold on living electrically and you can quote me."

Hard Core Is Electric House Heating

This is the pattern, then, that we have found in all instances among the families who are already enjoying total electric living. And the hard core of this is flameless electric house heating.

Let's take a look at one of these ads. Each ad spells out the *concept* of total electric living, and each picture with its caption supports this concept idea. The main picture and the headline talk about and illustrate flameless electric house heating, and the subhead relates this immediately to the Gold Medallion Home. Each ad

then goes on to picture other components of total electric living:

- Flameless electric range, and its benefit of cleanliness.
- Flameless electric clothes drying, and its benefit of being odorless, free from fumes.
- Flameless electric water heating, and its benefit of installation anywhere because it needs no flue.
- The full Housepower story, both showing and telling how pleasant and efficient life can be when there are enough circuits of sufficient capacity, with plenty of switches and convenient outlets to run all appliances simultaneously at top performance.

A Signature-Promise

And, naturally, we identify ourselves with a signature-promise of "You Live Better Electrically."

Every one of these components relates directly to the concept. We deliberately spell out in words and pictures the involvement of the *entire* family and the family benefits that come from total electric living. We never, never, never say that mother is going to be able to spend most of the day lying in front of a TV set because her electric appliances are doing her work for her. No, sir! Because that's just the kind of thing she doesn't want to do because it makes her feel guilty. So, we say it positively in terms of the family.

This very ad that I've just described was tested recently by the CSMI method. I mentioned how our appliance advertising had set a new high in its particular category, and how our electric house heating ad was hailed as one of the 10 best of the year. Now I've got the granddaddy of them all! The Gold Medallion Home ad set a completely new record—the highest score observed to date on a two-page black-and-white ad tested—with a score that is 23 points above the median for all such ads tested. A whopping 68 percent of all those interviewed remembered the ad, and 57 percent could play back a specific message.

The builder, of course, is one of the key influences in this crusade for total electric living. Therefore, LBE has a separate campaign featuring builders who build Medallion Homes. These men testify to specific reasons why they put electric house heating into the homes they build—to save money for themselves, to build better homes, to sell them faster, to guarantee more customer satisfaction. In this campaign, builders tell other builders why and how to benefit themselves by joining in this electric heating effort. Testimonials of this kind have strong believability.

An On-the-Spot Interview

Let's take a moment for a portion of an actual on-the-spot interview made with a builder:

Father: "This is my son, Len. Let him tell you about how we use electricity in building."

Son: "We think that electric house heating is pretty much ideal. That's particularly true from a sales angle, which is our most important concern. Then, it's just as important from a service standpoint, which is our later concern. We've been remarkably free from any customer complaint."

Father: "Sunday is our biggest day for customer traffic. About 50 percent of those who come in are ignorant of electric heating. Anything you can do to help educate them will mean a lot to us. We tell the prospect that there's no noise, no dirt, no maintenance with electric house heating. And we make a point of telling the prospect's wife that electric heating provides more usable space for her."

Son: "All in all, we choose electric house heating over any other system. Our buyers like it, we like it and we're convinced it's *the* heating system of the future."

Now, research has shown us that our sales messages are being directed correctly to overcome consumer resistance. Fear of the high cost of appliances, even of electricity itself, has been proven to be a deterrent. By showing *family involvement* and benefits for the *whole family*—not just an appeal to "time off" for the housewife—we provide strong motivation to overcome this deterrent.

Our appliance advertisements are perhaps the most dramatic of all. The 1962 electric dryer ad uses a real-life family and not professional models. We have reasons for this, because we have received mail voluntarily sent in by women who have commented that our ads show people who are wholly believable, just like "the gal next door"—and that's what we want!

Specific Benefit in Each Headline

Last year we experimented by putting a specific benefit into each headline, such as saying "Flameless Electric Cooking Is So Clean." We went out into the field and checked reactions on this approach, and we found that housewives were quite willing to accept the bigger, broader story that is exclusive to electricity—the very fact that it is flameless. By punching up this thought, we trade heavily on the exclusive quality of electricity. We tell the specific benefit story in the text which is short, sweet and to the point. And by using this technique we achieve a uniformity of headline treatment that works right across the board. Ranges, water heaters, clothes dryers, the steps in putting the ads together are basically the same—all designed to further our cause, to register *flameless* and to hammer home *You Live Better Electrically!*

Here's how local utilities have been using the Live Better Electrically promotion materials:

- Seventy companies have purchased well over $100,000 worth of window banners and other point-of-sale materials.
- Utilities have purchased over 60,000 reprints of Live Better Electrically ads for display in showrooms, offices, dealer meetings, and as mailing pieces.
- Eighty-four utilities are using artwork from the LBE ads for their own local ads, getting beautiful, high-quality artwork and saving themselves the great expense of additional photography or art.

That tells me that a lot of people certainly do like what they've seen!

Figure 2

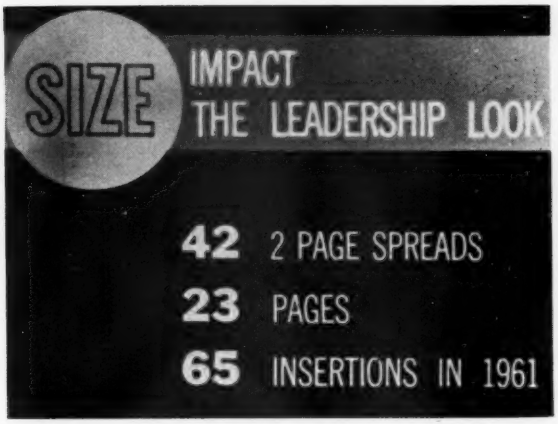


Figure 3

We've discussed what to say in the LBE advertising. Let's turn to the equally important subject of *where* to say it—the national magazines in which these ads are published. A great media schedule calls for three basic elements: size, concentration, continuity (Figure 2).

The size of our ads is extremely important. Size is dictated by several things:

- There must be enough space to tell the story—in other words, big enough to meet the creative needs.
- Big enough to compete for attention in the magazines—we sometimes call this *impact*.
- And big enough to look important—the *leadership look*.

During 1961 there will be 42 double-page spreads, 13 of them in color; and 23 single-page ads—a total of 65 insertions for the year (Fig. 3).

Continuity means running our ads often enough in the same magazines to keep our message constantly before our readers. This is essential for two reasons:

- Because Live Better Electrically's job is basically educational, planting the seed of the total electric living concept and nursing it along, and
- Because we know consumers are in the market for months before buying new appliances, continually shopping for competitive facts.

During 1962 we shall follow the same basic pattern adopted for 1961, by insuring that there is a sufficient volume of consumer-directed messages to reach the public at a rate of almost one ad per week. We'll be in *Life* magazine and in the *Saturday Evening Post* at a rate of better than one ad per month. We'll be in *Better Homes & Gardens* every issue, and we'll be in a second strong "shelter" publication, *American Home*, two out of every three issues. This is what I call superb continuity.

Why use only these magazines? The LBE program feels it is far better to do a superlative job in a few good magazines than to do an ordinary job in many. These ads communicate an idea. First, the idea must be

Figure 4

planted; then it must be kept alive by reminding our readers of the electric living advantages over and over again. These are the big leadership magazines. If we are to look like leaders, if our message is to look important, our ads must run in magazines where people expect important information. Ads in *Life*, *Saturday Evening Post*, *Better Homes & Gardens*, *American Home* and *Reader's Digest* cover every economic level, every type of reader—and reach more than 70 percent of all U.S. households, the households that are important to you and your company in your local service area. Live Better Electrically chooses these few important magazines to tell its story over and over again—rather than scattering its shots over many publications.

The Live Better Electrically management, the staff and the agency have all given much thought to television and how and where it might someday be employed to get our selling messages across. We estimate that, to do a job that will measure up to our present standard, we would need a budget increase of more

(Continued on page 259)

Panel Discussion: Elements in the Financing of the Utility Industry's Construction Program

Introduction

By C. B. Delafield
Vice President, Finance,
Consolidated Edison Co. of New York, Inc.

THERE isn't anything very simple about the money-raising job the industry has ahead of it. Both Edwin Vennard and Sherman Knapp have given some idea of the size of the problem—that the industry is going to be, roughly, investing $3½ billion a year for the foreseeable future on new plant and equipment.

The important thing is that about 60 percent of this money will have to be raised in the securities market. As you know, utilities are not like industrials, which can generate a large bulk of the money they need internally. But five years from 1965, I expect the electric utility industry will have to go to the capital market for about $12 billion.

Obviously, the money market which our speakers represent, analyze, and comment upon is important to the entire industry, and to each company within it. The market is something like a woman — a creature of changing moods. The fashions of today are discarded tomorrow, but they may become popular again a few years hence.

The changeable outward face of the market reflects, at any given moment, the judgement of many people, based on the past, the present, and the thoughts and ideas of the future. For good or ill, the utilities industry must live with the market. Of necessity, we must go to the well for new money under the pressure of rising demand for our services, and the responsibility to be ready to meet that demand when it is made.

The state of our earnings, the cost of money, and the technical difficulties to be overcome cannot postpone or delay our orderly growth. Our speakers view the market in a somewhat different sense. The investment banker judges it in terms of what the market will absorb and what the cost might be at any given time. The commercial banker studies the money market as a weather vane, as he charts his way through the squalls of the short-term market, and his own investment department and trust department by helping to really set the price of the securities which the investment banker (long-term securities) is discussing.

The investment funds and the investment trusts, in much the same way, help set the market, but with more emphasis on equity securities. And, observing it all as a detached critic, the financial writer presents the investor with a distillation of the vagaries of the market and what they mean.

The people who judge and who buy securities know our industry and know its financial requirements, but they must also take into account a great many more factors—the general business climate, promise of competing securities, the latest pronouncements from Washington, London, Moscow or Paris. All of these things have a direct impact on the financial market.

Understandably, our panel is influenced by the vantage point from which each member views us and the market and, like the utility industry, it is seldom in agreement. I think that's one of the strengths—this uncertainty—one of the realities of the market about which our speakers can talk with some degree of confidence. Each company, in setting its financial course, must accept these realities of the market-place.

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 7, 1961.

The Current and Prospective Business Climate as It Will Influence Utility Financing

By G. W. McKinney, Jr.
Assistant Vice President,
Irving Trust Co.

WE are now well along the road to recovery from the briefest and the mildest of the postwar recessions. Strong upward pressures are being exerted in a great many areas, and a self-sustaining cumulative expansion is under way in by far the greater part of the economy. No longer is the question "is the recovery fact or fiction?" but "how strong will it be, and how fast will it proceed?"

Although the best way to find out is to wait and see, most of us can't afford that luxury. Our business decisions have to be made today, in the light of our best appraisal of the prospects for future business developments; they cannot await that certainty of knowledge which only history can bring us.

Those facts which are now available to us give many indications that as 1961 progresses we should expect the economy to continue to expand quite rapidly.

Production turned upward at a spectacular rate in April, sparked by the strong recovery in steel and automobiles. Production continued to increase strongly throughout May, and apparently is rising to even higher levels.

Output Is Strong

Output of both electrical and non-electrical machinery is strong; electrical equipment prices are under upward pressure, stemming from heavy demand. Business expenditures for plant and equipment seem to be turning upward. Construction expenditures—a very important 11 percent of the total economy—are on the rise. There are increasing indications that the inventory liquidation which sparked the recession—and, indeed, which by itself accounted for virtually the entire economic contraction—inventory liquidation has about run its course. Accumulation of inventories may well provide a further significant stimulus to the economy in months to come.

Sales of merchandise to other countries fell in April from the near-record levels reached in March, but are still providing an important impetus to the economy and will probably continue at quite high levels most of this year. Business profits have held up better than in previous recessions and profit margins are improving. Consumer spending activity stepped up somewhat in May, and recent surveys give the impression that consumers will expand their spending further as income levels rise. Government spending has increased sharply at Federal, state and local levels, and the rate of increase does not appear to be slackening.

Higher Demands for Credit

One of the natural and inevitable results of such expanding economic activity is higher demands for credit. After a light first quarter, corporate financing calendars have been running quite heavy and there is more to come. The Irving Trust Co. financing calendar estimates that 1961 financing by large electric companies will total $1.6 billion, and large gas companies $800 million—about the same as in 1960. The bulk of the offerings yet to come will probably be crowded into a heavy fourth quarter.

Corporate demands for credit will be competing with other credit needs. The heavy municipal calendar is being reflected in prices of municipal securities. The Federal government will be borrowing upwards of $10 billion (gross) before year-end. Mortgage credit demands are quite strong. Business demands for bank credit should pick up later this year as inventories are built up. And the stage is set for another substantial upsurge in consumer credit.

As demands for credit grow, interest rates can be expected to rise, too. Yet doubt has been raised in some people's minds by statements on the part of the administration regarding the importance attached to lower levels of interest rates.

Just within the last month or so low interest rates

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 7, 1961.

and easy money have been held to be desirable by Secretary Dillon, Council of Economic Advisers Chairman Heller, the Joint Economic Committee of Congress, and President Kennedy.

What has caused the confusion over these statements is a failure to appreciate that, in the face of a boom of the magnitude which now faces us, interest rates can be prevented from rising only by massive intervention of the sort used by the Federal Reserve in pegging bond prices during the early postwar years. Actually, Federal Reserve officials have been unusually candid and outspoken this spring in trying to make clear their position.

Although the Federal Reserve has emphasized that it is not seeking to peg rates at any particular level, international balance of payments considerations have made it important for them to prevent short-term rates from falling as low as in previous recessions. The objective in respect to long-term rates has been described by Chairman Martin as facilitating "the flow of capital into productive investment activities."

Since an adequate flow of capital can be made available without forcing rates down to lower levels, the most logical conclusion is that interest rates will drift upward with the increase in business activity—but not as sharply upward as in 1958. This view seems to be fully consistent with the testimony before a Congressional Committee last week by Chairman Martin of the Federal Reserve Board, who told the committee that the board should not be asked to force rates down. He pointed out that Federal Reserve actions can only mitigate the tendency of interest rates to rise if business conditions continue to rise.

The short-run outlook for the economy, then, is for a strong economic expansion, with an accompanying rise in demands for credit and an upward drift in interest rates. Further, there is sufficient slack in the economy to permit a quite substantial expansion in production before significant inflationary pressures are touched off.

All Not Peaches and Honey

But this latter point—that there is considerable slack in the economy—leads to the observation that despite the very favorable short-run outlook all is not peaches and honey. Looking ahead a little further, there are economic problems and politico-economic problems of real importance with which we must deal. This very fact of slack in the economy, although it gives us a tremendous opportunity for real economic growth, is at the same time one of the more significant longer-run problems in the economy. Much of this unemployment will disappear with general economic expansion; this is itself one of the reasons for the very favorable outlook for the economy. But a substantial proportion of the unemployed is the unskilled, the semi-skilled, those possessed of skills which are obsolete, and are no longer needed. These workers can be trained in the skills needed by a growing economy; they can be shown how and where to look for jobs which can utilize those skills; perhaps their movement into areas where their skills are needed by the free enterprise system can be facilitated in other ways. Yet an ill-conceived program —for example, one which would subsidize location of uneconomic industries in depressed areas—would do more harm than good. Or an attempt to solve technological unemployment by easier money and higher spending could lead to harmful inflationary pressures.

A second politico-economic problem of considerable importance, one about which you will be hearing more as time goes on, stems from the recent rebirth of the stagnation thesis so popular during the Thirties.

The present version is that our tax structure becomes too restrictive as income levels rise, and thus chokes off economic recovery and growth before it has a chance to really get started. This is said to explain the failure of the economy to grow more vigorously after the 1957-58 recession.

The cure proposed, of course, is to increase government spending to take up the slack. We don't have time to do more than point out that this is a familiar solution with a new excuse for applying it, and perhaps to suggest that a careful overhaul of the tax structure—an overhaul which gave full cognizance to the importance of principles of equity in taxation—might well prove more beneficial to the cause of growth in a free economy than would additional expenditure programs.

The way in which we approach these two politico-economic problems will have much to do with the vigor of our economy in realizing its full growth potential in the months and years to come.

As to the long-range outlook (and I was asked to tackle that, too), history has demonstrated that the American people are basically a pretty level-headed lot. Time after time it has seemed that the problem of the moment might be getting somewhat out of hand. And yet we have rather consistently managed to find a quite satisfactory solution. I am an incorrigible optimist with regard to our longer-range outlook, and I think with good reason. Lord Macaulay made some rather astute observations on this point, writing in England more than a hundred years ago. I'd like to close by quoting this passage, written in 1830:

> "The present moment is one of great distress. But how small will that distress appear when we think over the history of the last forty years; a war, compared with which all other wars sink into insignificance; taxation, such as the most heavily taxed people of former times could not have conceived; a debt larger than all the public debts that ever existed in the world added together; the food of the people studiously rendered dear; the currency imprudently debased, and imprudently restored. Yet is the country poorer than in 1790? We fully believe that, in spite of all the misgovernment of her rulers, she has been almost constantly becoming richer and richer. . . . On what principle is it that, when we see nothing but improvement behind us, we are to expect nothing but deterioration before us?"*

*T. B. Macaulay, review of Southey's Colloquies, as quoted by David McCord Wright in *Democracy and Progress*, pp. 219-220.

The Viewpoint of the Institutional Investor in Electric Utility Common Stocks

By F. D. Chutter
Industry Specialist,
Massachusetts Investors Trust

THIS is the viewpoint of one individual representing one type of institutional investor in electric utility common stocks.

Massachusetts Investors Trust and Massachusetts Investors Growth Stock Fund are "open-end" mutual funds which, as a matter of policy, invest only in common stocks and short-term government and corporate notes.

Our industry, like the electric industry, is a service industry. We serve those individuals and institutions who do not care to assume the duties and responsibilities of investing money. We like to think that we are doing a good job—that our methods of evaluation improve as the years pass by. We must be objective in our thinking and invest available funds in the best profit factories we know. Perhaps a number of exhibits which have been presented to my trustees and advisory board, or otherwise used in my work, will be of interest.

Fig. 1 shows the size of MIT, the importance of electric utilities in our portfolio and the general composition of this group by types of regulation as of March 2, 1961, compared with like data at the end of 1950, a period of just over a decade.

Our net assets are 4.6 times what they were a decade ago and on March 2 totaled about $1.7 billion (Line 1, Fig. 1).

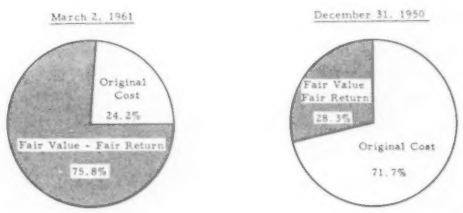
Line 2, Fig. 1 shows our electric utility holdings are almost 5.8 times what they were at the end of 1950 and now total about $218 million, or 12.9 percent of the portfolio compared with 10.4 percent at the close of 1950.

Aside from the rapid growth in these figures, which indicates a growing source of equity funds, the interesting factor is the great change in the composition of the electric utility portfolio during the past 10 years. Currently, about 75 percent of our electric portfolio is invested in states which we classify as Fair Value or Fair Return states, with 25 percent invested in Original Cost states. Ten years earlier, these percentages were almost reversed. It is fair to say that our objective for the future is to have an increasing percentage in the more favorably situated category. A high or increasing over-all rate of return is what we are seeking. This means that a favorable regulatory environment is essential.

The back-up for this tabulation is presented in Table I. Our holdings in states which we currently classify as fair value-fair return are listed on lines 1 to 13 in the order of decreasing importance, and our holdings in states currently classified as original cost are on lines 16 to 27, also in order of decreasing importance. Several things may be pointed out:

- Four states currently account for 51.5 percent of our current holdings.
- With two minor exceptions, our holdings in the

Electric Utility Holdings of Massachusetts Investors Trust (000)



Line							Line
1	$1,686,914			Total Net Assets	$362,307		1
2	$ 217,725			Total Electric Utilities	$ 37,564		2
3	12.9%			% of Total Net Assets	10.4%		3
				Electric Utility Holdings in:			
4	$ 164,902	75.8%		Fair Value-Fair Return States	$ 10,634	28.3%	4
5	$ 52,823	24.2%		Original Cost States	$ 26,930	71.7%	5

Figure 1

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 7, 1961.

TABLE I—COMPARISON OF ELECTRIC UTILITY HOLDINGS IN MASSACHUSETTS INVESTORS TRUST PORTFOLIO

Line	Fair Value Fair Return States	March 2, 1961 Amount (000)	%	December 31, 1950 Amount (000)	%	Change in % Points
1	Texas	$ 30,073	13.8%	$ 1,213	3.2%	+10.6%
2	Ohio	28,272	13.0	4,846	13.0	—
3	*Illinois	27,013	12.4	2,828	7.5	+ 4.9
4	Florida	26,809	12.3	1,168	3.1	+ 9.2
5	Pennsylvania	11,880	5.5	1,581	4.2	+ 1.3
6	Oklahoma	11,656	5.4	644	1.7	+ 3.7
7	*Alabama	10,428	4.8	581	1.5	+ 3.3
8	*Kansas (a)	5,998	2.8	619	1.7	+ 1.1
9	*Missouri	5,313	2.4	2,885	7.7	— 5.3
10	Indiana	3,479	1.6	577	1.5	+ 0.1
11	*Iowa	—	—	1,425	3.8	— 3.8
12	Virginia	2,590	1.2	429	1.1	+ 0.1
13	Philippines (?)	1,391	0.6	186	0.5	+ 0.1
14	*Less—Classified as original cost on 12/31/50	—	—	(8,348)	(22.2)	
15	Total	$164,902	75.8%	$10,634	28.3%	
	Original Cost States					
16	New York	$ 13,797	6.3%	$ 6,256	16.7%	—10.4%
17	California	—	—	3,288	8.8	— 8.8
18	Georgia	11,362	5.2	633	1.7	+ 3.5
19	Wisconsin	—	—	1,274	3.4	— 3.4
20	Louisiana	10,386	4.8	1,251	3.3	+ 1.5
21	New Jersey	4,979	2.3	2,063	5.5	— 3.2
22	West Virginia	4,329	2.0	718	1.9	+ 0.1
23	Arkansas	3,427	1.6	834	2.2	— 0.6
24	Mississippi	3,390	1.6	527	1.4	+ 0.2
25	Kentucky	510	0.2	84	0.2	—
26	Tennessee	378	0.1	63	0.2	— 0.1
27	Michigan	265	0.1	1,591	4.2	— 4.1
28	*Add—Classified FV-FR on 3/2/61	—	—	8,348	22.2	
29	Total	$ 52,823	24.2%	$26,930	71.7%	
30	GRAND TOTAL	$217,725	100.0%	$37,564	100.0%	

(a) = Fair value on basis of recent lower court decision.

fair value-fair return states have increased percentagewise, or remained constant during the past decade. Some of the increases are substantial.

- Three original cost states are of great importance to us: New York, Georgia and Louisiana.
- Important holdings in several original cost states have been sharply reduced or eliminated.

Table II shows the electric utility portfolio holdings of MIT and the Growth Stock Fund in millions, by states, with the weighted average over-all rate of return for each of the five years, 1955 to 1959, inclusive, together with the five-year average. The order is based on the rate of return earned in the most recent year for which data are available, 1959, with the highest at the top of the list. The 25 states with the best rate of return are on the left half of the table, and the rest are on the right.

You will note on line 26 that MIT and the GSF had about $185 million and $41 million, or almost 85 percent and 98 percent, respectively, in states in the top half of the list. Of the 15 percent balance in MIT which is invested in states in the lower half of the table, 4.1 percent is in two fair value states where improvement is expected, and 6.6 percent is in companies which are doing better than the median rate of return for 1959 of 6.17 percent.

The rates of return earned by the electrics are low compared with what is available in the industrial category. The median over-all rate of return on our electric utility portfolio in 1960 was 6.4 percent. Table III shows a distribution chart of the rates of return earned by the 81 industrial companies in the MIT portfolio on March 31, 1961, based on the latest annual reports available on May 1, 1961.

The median is 10.9 percent.

The mode is in the 9.0 to 9.9 percent interval.

The 10 industrials earning less than the 6.4 percent median on the electric utilities represented 6.2 percent of the market value of the industrials. Most of the issues were in the non-ferrous and steel industries, which had a poor year in 1960. I would expect that the number of companies in this category would be reduced either by improved operations or by elimination from the portfolio. Similarly, the median rate of return of our electric portfolio is expected to increase both through improved operations and by security transactions.

In any event, the rate of return earned by the industrials does not restrict improvement in the utilities' rate of return.

From these tables, it is evident that we give great weight to the prospective over-all rate of return. We seek a high and stable return or an improving return. Widely fluctuating rates of return are of great concern to us, suggesting that perhaps managements are not aware of the true significance of this factor and are, therefore, slow to take adequate remedial steps.

As some of you know, I spend a material amount of time visiting public utility commissions, trying to bring to them the viewpoints of the utility investor.

Table IV is a tabulation which is typical of one which I have used in discussions with some commissions and will use in the future, particularly with commissions in original cost or low rate of return states. The purpose is to express the current net plant account in terms of current dollars and in no sense of the word does it represent current reproduction costs. Fortunately, it takes only a short time to prepare such a tabulation.

Column A shows the gross plant, excluding adjustment accounts at the end of each year since 1939, and column B is the corresponding depreciation account. Subtracting column B from A results in column C, the net plant. The annual changes in net plant are shown in column D. Column E is the value of the dollar, according to the U. S. Bureau of Labor Statistics, based on the 1947-1949 dollar, while column F shows the data in column E in terms of the 1960 average dollar. Column G values the net plant account on Dec. 31, 1939, and the subsequent annual increments or decrements in terms of the 1960 dollar. Thus, the total of column G represents an approximation of the net plant on Dec. 31, 1960, in terms of the 1960 average dollar.

In this case, such net plant is $1,752 million expressed in 1960 dollars, or $446 million in excess of

TABLE II—ELECTRIC UTILITY PORTFOLIO HOLDINGS BY STATES—WEIGHTED AVERAGE RATE OF RETURN OF COMPANIES REPORTED IN FPC STATISTICS OF ELECTRIC UTILITIES IN U.S., PRIVATELY OWNED

Line	State	No. Cos. in 1959	Holdings (Mil) March 2, 1961 MIT	Holdings (Mil) March 2, 1961 GSF	% Gross Income to Total Capitalization including Notes Payable: Five Year Avg.	1959	1958	1957	1956	1955
	Total Cos.					260	257	261	266	272
1	Mont.	1			8.16%	8.29%	8.44%	8.21%	7.86%	7.98%
2	Nev.	4			6.71	8.02	7.14	6.44	6.36	5.59
3	Alaska	1			7.44b	7.60	7.28			
4	Wyoming	3			7.03	7.27	7.27	6.65	7.09	6.87
5	S. D.	3			6.86	7.22	7.02	6.74	6.74	6.60
6	Texas	12	$ 30.1	$13.3	7.13	7.13	7.10	7.01	7.33	7.09
7	N. M.	2			6.79	7.08	6.87	6.61	6.92	6.49
8	Kentucky	4	.5		6.39	6.89	6.63	5.89	6.23	6.30
9	Florida	5	26.8	12.0	6.73	6.85	6.95	6.75	6.72	6.40
10	Kansas	4	6.0		6.35	6.84	6.42	6.22	6.38	5.89
11	Iowa	7			6.40	6.72	6.21	6.30	6.46	6.30
12	W. Va.	6	4.3		6.31	6.61	6.50	6.09	6.05	6.30
13	Minn.	4			6.40	6.60	6.27	6.39	6.44	6.30
14	Illinois	9	27.0		5.91	6.59	5.96	5.63	5.75	5.63
15	S. C.	3			6.45	6.58	6.44	6.19	6.84	6.18
16	Maryland	8			6.25	6.53	6.01	6.20	6.25	6.26
17	Virginia	4	2.6		6.23	6.53	6.38	6.15	6.20	5.87
18	Miss.	2	3.4	1.1	6.27	6.49	6.32	6.53	6.43	5.56
19	Okla.	2	11.6	2.3	6.35	6.45	6.29	6.16	6.53	6.32
20	Georgia	2	11.4	3.9	6.16	6.36	6.33	5.99	6.16	5.98
21	Ohio	9	28.3		6.36	6.35	6.02	6.21	6.59	6.63
22	La.	4	10.4	4.6	6.05	6.24	6.01	5.87	6.15	5.97
23	Pa.	18	11.9		6.38	6.23	6.22	6.26	6.72	6.45
24	Ala.	1	10.4	3.6	6.19	6.22	6.38	6.18	6.14	6.01
25	N. D.	2			5.54	6.17	5.35	5.48	5.46	5.25
26	Subtotal		$184.7	$40.8						
27	Del.	1			5.62%	6.11%	5.97%	5.42%	5.42%	5.17%
28	Wis.	12			5.87	6.03	5.58	5.71	5.94	6.10
29	Ind.	7	$3.5		5.92	5.97	5.78	5.99	5.95	5.90
30	N. C.	4			6.01	5.95	6.29	5.98	5.76	6.09
31	Conn.	6			6.01	5.94	6.13	5.93	6.38	5.68
32	Mo.	9	5.3		5.93	5.93	5.63	6.11	5.94	6.03
33	D. C.	1			5.65	5.86	5.15	5.75	5.73	5.75
34	Mich.	7	.2		5.66	5.84	5.39	5.50	5.74	5.83
35	Utah	2			5.74	5.81	5.70	5.85	5.82	5.53
36	Arizona	2			6.67	5.78	6.33	6.58	7.00	7.64
37	R. I.	3			5.06	5.72	4.73	4.76	4.83	5.27
38	Ark.	2	3.4	$1.0	5.83	5.69	6.13	6.19	5.26	5.86
39	Ore.	4			5.92	5.68	5.39	5.71	6.47	6.36
40	Colo.	3			5.84	5.67	5.81	5.67	6.05	5.99
41	Vt.	4			5.64	5.67	5.97	5.49	5.39	5.69
42	Hawaii	5			5.66a	5.66				
43	Mass.	24			5.43	5.60	5.58	5.00	5.44	5.52
44	Calif.	5			5.32	5.52	5.25	5.00	5.42	5.39
45	N. J.	5	5.0		5.41	5.45	5.23	5.29	5.40	5.66
46	Tenn.	3	.4		4.63	5.44	5.59	3.95	4.18	3.97
47	Maine	6			5.10	5.36	5.14	4.86	4.94	5.18
48	N. Y.	13	13.8		5.00	5.23	5.22	4.68	4.79	5.07
49	N. H.	7			5.11	5.16	5.17	5.27	4.97	4.98
50	Wash.	2			5.83	4.78	4.60	5.73	6.64	7.41
51	Idaho	1			4.75	4.62	4.14	4.29	5.26	5.45
52	Philippines		1.4							
53	TOTAL		$217.7	$41.8						

a = 1 year. b = 2 years.

the figure at which such properties are carried on the books of the company. This unrecorded value is equal to $19.25 per share on the present shares outstanding and would bring the adjusted book value to $38.32 per share, or 200.9 percent of book value.

Using a company located in the central industrial area, and again starting with the net plant account at the end of 1939, but repricing the annual increments based on the Handy-Whitman index of total construction costs for an all-steam company, and with 1959 as the year of reference, the unrecorded value of the property totaled $306 million. This amount is equal to $45.25 per share and would bring the adjusted book value to $69.25 per share, or 288.5 percent of actual book value.

I should like to think that on your return to your offices someone would be delegated to prepare these two sets of figures for your company. If this were done, the results would vary from those presented here, due largely to three factors:

- The percentage of net plant on Dec. 31, 1939, to the present plant.
- The relative amount of hydro capacity.
- Related to Item 1, the relative growth of the territory.

The next step is to compare the market values for electric utilities with their respective book values to see how successful managements have been in creating a real profit for the investor. Table V is a distribution chart of the percent of market value to book value of the 131 electric utilities in the Bear,

TABLE III—OVER-ALL RATES OF RETURN EARNED BY 81 INDUSTRIAL COMPANIES*

Range in Rate of Return	Number of Companies
Under 6%	XXXXX X
6.0 to 6.9	XXXXX
7.0 to 7.9	XXXXX
8.0 to 8.9	XXXXX XX
9.0 to 9.9	XXXXX XXXXX
10.0 to 10.9	XXXXX XXX
11.0 to 11.9	XXXXX XXX
12.0 to 12.9	XXX
13.0 to 13.9	XXXXX XX
14.0 to 14.9	XXXXX X
15.0 to 15.9	XXX
16.0 to 16.9	XXXX
17.0 to 17.9	X
18.0 to 18.9	X
19.0 and over	XXXXX XX

MIT portfolio companies on March 31, 1961, excluding two European companies, and based on latest annual report available May 1, 1961.

TABLE IV—THE SOUTHERN COMPANY SYSTEM, VALUE OF NET PLANT DEC. 31, 1960, IN TERMS OF 1960 AVERAGE DOLLAR *(In Thousands of Dollars)*

Line	Dec. 31	(A) Gross Plant Excluding Adjustment Acounts	(B) Depreciation Reserve	(C) Net Plant Excluding Adjustment Accounts	(D) Increase in Net Plant	(E) Value of Dollar U.S. Bureau of Labor Statistics 1947-1949 Dollar = $1.00	(F) 1960 Average Dollar = $1.00	(G) Value of Net Plant in 1960 Dollars
1	1939	$ 343,616	$ 19,479	$ 324,137		$1.678	$2.121	$ 687,495
2	1940	346,733	23,273	323,460	$ (677)	1.670	2.111	(1,429)
3	1941	360,174	40,628	319,546	(3,914)	1.591	2.011	(7,871)
4	1942	365,337	49,133	316,204	(3,342)	1.435	1.814	(6,062)
5	1943	372,315	56,643	315,672	(532)	1.352	1.709	(909)
6	1944	381,702	63,850	317,852	2,180	1.330	1.681	3,665
7	1945	380,891	66,676	314,215	(3,637)	1.300	1.643	(5,976)
8	1946	397,255	71,836	325,419	11,204	1.203	1.521	17,041
9	1947	417,578	77,027	340,551	15,132	1.048	1.325	20,050
10	1948	458,452	75,073	383,379	42,828	.973	1.230	52,678
11	1949	500,384	81,627	418,757	35,378	.982	1.241	43,904
12	1950	553,224	87,421	465,803	47,046	.973	1.230	57,867
13	1951	639,486	101,441	538,045	72,242	.901	1.139	82,284
14	1952	730,208	114,311	615,897	77,852	.881	1.114	86,727
15	1953	828,501	128,916	699,585	83,688	.874	1.105	92,475
16	1954	891,613	146,046	745,567	45,982	.871	1.101	50,626
17	1955	957,133	166,271	790,862	45,295	.873	1.104	50,006
18	1956	1,033,891	188,988	844,903	54,041	.861	1.088	58,797
19	1957	1,149,710	215,935	933,775	88,872	.833	1.053	93,582
20	1958	1,284,289	242,612	1,041,677	107,902	.810	1.024	110,492
21	1959	1,452,230	271,387	1,180,843	139,166	.802	1.014	141,114
22	1960	1,610,765	304,813	1,305,952	125,109	.791	1.000	125,109
23	Net plant expressed in 1960 dollars							$1,751,665
24	Net plant at original cost							1,305,952
25	Excess value not recorded							$ 445,713
26	Excess value not recorded, per share							$ 19.25
27	Book value per share 12/31/60, pro forma							19.07
28	Book value adjusted to 1960 dollars							$ 38.32

NOTE: Retroactive adjustments have not been made for purchases and sales of properties. ( ) Denotes red figure.

Stearns & Co. tabulation for May, 1961. Three figures have been inserted in this tabulation:

- At line 10, 200 percent, which is the percent of book value adjusted for a constant dollar to the actual book value as developed in Table IV. This is the area at which the decline in the value of the dollar is offset.
- At line 20, 290 percent, which is the percent of book value adjusted by the Handy-Whitman index to the actual book value. This is the area at which the reconstruction cost new, less depreciation, is recognized.
- At line 13, the median of the group.

From this table, it is evident that the stocks of 45 companies are not selling high enough to offset the loss due to the depreciation of the dollar.

Despite the good utility markets in the last year or two, only 28, or 22 percent, of the companies show a profit to the investor when compared with the indicated present value of the properties which have been dedicated to public service.

Fifty-eight companies, or 44 percent of the companies, occupy an intermediate position.

The future, however, may be better than the past. Some years hence, we will look back on the present and recent past and perhaps call it the "Era of the Growth Stock." Certainly, we have all observed that investors have been willing to pay premiums for the

(Continued on page 257)

TABLE V—% OF MARKET VALUE TO BOOK VALUE, 131 ELECTRIC UTILITY COMPANIES IN THE BEAR, STEARNS & CO. TABULATION, MAY, 1961

Line No.	% Market to Book	No. of Cos.		
1	Under 129%	1	X	
2	130-139	4	XXXX	
3	140-149	3	XXX	
4	150-159	4	XXXX	
5	160-169	10	XXXXX XXXXX	
6	170-179	6	XXXXX X	
7	180-189	6	XXXXX X	
8	190-199	11	XXXXX XXXXX X	
9		45		
10	200—The area at which the decline in the value of the dollar is offset.			
11	200-209%	9	XXXXX XXXX	
12	210-219	8	XXXXX XXX	
13	220-229	7	XXXXX XX	Median 224.5%
14	230-239	7	XXXXX XX	
15	240-249	8	XXXXX XXX	
16	250-259	6	XXXXX X	
17	260-269	3	XXX	
18	270-279	5	XXXXX	
19	280-289	5	XXXXX	
		58		
20	290—The area at which RCND is recognized.			
21	290-299%	2	XX	
22	300-309	3	XXX	
23	310-319			
24	320-329	1	X	
25	330-339	4	XXXX	
26	340-349	1	X	
27	350-359	3	XXX	
28	360-369	2	XX	
29	370-379	1	X	
30	Over 380	11	XXXXX XXXXX X	
31		28		

The Function of the Commercial Banker and the Necessity of Compensating Balances

By E. B. White
Vice President,
First National City Bank of New York

MY topic is divided into two parts: (1) outlining the function of the commercial banker in financing the utility industry's construction program and (2) explaining the necessity of compensating bank balances.

I wish the second part were as easy to explain as is the first.

Commercial Banks Provide Means

Commercial banks, in effect, provide the means to facilitate economic long-term financing. This is accomplished through interim bank loans and by a wide range of financial services which a commercial bank can furnish to its customers.

Interim bank loans are economical, usually at the prime interest rate for maturities less than one year. There are no legal fees or extensive documentation involved. Terms may be arranged to give the borrower complete flexibility. He may borrow, prepay without penalty, and reborrow, depending upon his needs.

The economies of interim borrowing can be transferred to economies in long-term financing. To illustrate, here is an excerpt from a recent statement issued by a well-known electric utility:

> "Substantial economies in the permanent financing of the company's continuing expansion can be realized if the company were permitted to consolidate its capital requirements for a longer period of time through bank borrowings and thus enter the money market for larger amounts of capital and at less frequent intervals."

In other words, a bank credit can enable a company to come to market once a year instead of twice because the bank stands by to provide funds to pay the construction bill. The savings involved in less frequent long-term financing are substantial.

One of the major advantages of available bank credit is the backstop it provides in scheduling long-term financing. This advantage is well summarized by a recent release from another electric company:

> "At the 1960 year-end the company had drawn down $10 million of its $19 million line of credit with banks. This credit gives management complete flexibility in scheduling the next issue of permanent securities. If market conditions are favorable, this offering is expected to be common shares. These probably will not be sold before next fall."

The economies in picking an advantageous time for entering the capital market are obvious and substantial.

While there are two schools of thought on the advisability of the use of interim bank credit, we have found that the use of bank loans by the utility industry (electric, gas and telephone), has in recent years reached an annual volume of approximately $2 billion. This demonstrates to us that the industry finds bank loans useful in its financing programs.

If bank credit were to be available only on a sporadic basis when the banks are in an "easy" money position, they would not have much permanent value as a reliable backstop. This leads us to the second part of the topic, how to insure availability of bank credit on a continuing basis, which is tied in directly with the necessity of maintaining compensating balances.

Principal Function of Compensatory Balances

The principal function of compensatory balances is to provide banks with the primary source of funds to invest in earning assets. Deposits are turned into earning assets first by making loans to customers and second by investing the remainder in portfolio securities. Income from loans and investments pays the expenses of providing banking services to customers and making a profit for the banks' stockholders.

Without deposit growth a commercial bank would be stagnant. Beginning with a pool of invested capital

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plus management, the principal objective of a bank is to merit the confidence of the business community, attract deposits and grow to a point where a broad range of services can be rendered to customers.

In recent years the drive for increasing bank deposits has been very active through rapid spread of branch banking and also by bank mergers. The objective has been to get more deposits from new customers and to get increased deposits from existing customers. New branches have been established in developing areas where potential new customers are located. By increasing the size of individual banks, mergers have enabled them to provide broader service and larger credit availability to their customers, accompanied by deposit expansion.

Universal Need for a Bank Relationship

A bank account is universally recognized as a necessity for doing business. Because of his bank account, the customer expects service which, in the case of an individual, may be only the convenience of paying by check and having the bank do most of his monthly bookkeeping.

Corporations maintain deposit accounts with one or more commercial banks as standard procedure in the conduct of their financial affairs. Most large corporations do business with banks in their local area, as well as with money-center banks in New York, Chicago, San Francisco, etc. The area banks extend credit and also do most of the day-to-day work of processing checks received from customers in payment for services rendered, checks drawn for payment of suppliers of materials and services, payrolls, etc. Work involved is usually heavy in volume and the banks do a great deal of the bookkeeping which would otherwise have to be done by the customer at his own expense. The money-center banks provide a wide variety of services and, in addition, have the capacity to supply credit over and above the lending limits of the area banks.

Commercial banking is highly competitive, which provides the incentive for a bank to devise ways and means of providing better and broader services for its customers. In the final analysis the usefulness of a bank to its customers determines the share of their deposit balances which the bank is likely to get.

Banker Must Help Solve Problems

In order to be useful it is essential that the banker understand his customer's business, anticipate his requirements and help solve his problems. As applied particularly to serving the public utility industry, many banks have specialized public utilities departments whose primary function is to mobilize the entire resources of the bank to assist in the banking and financial problems at hand. Banks are in a position to advise corporate management on major policy decisions, such as procedure to be followed in the light of economic and money market conditions. Banks mobilize corporate funds, collect notes, drafts or other negotiable instruments, make money transfers, provide safekeeping facilities for corporate investments and perform various agency functions. They are also able to provide credit and other background information on new companies moving into a service area, for example.

These services cost money and the chief source of compensation for the bank is via the deposit account.

Credit Availability

The availability of interim or term credit from commercial banks has a very tangible value, particularly to public utility companies which have large requirements for new capital to construct facilities to supply increasing demands of the public for service. Commercial banks have played an important part in financing these requirements because of the great flexibility in loan arrangements.

In determining the amount of credit which a bank is willing to extend to a customer, there are three limitations to be considered:

- The credit, capacity and capital of the borrower.
- The legal limit of the bank which, in the case of a national bank, is 10 percent of its capital and surplus.
- The amount of compensatory balances which the customer has maintained on a continuing basis.

Customers' anticipated needs for credit are usually staked out under a "line of credit" in effect for one year, or under a commitment to make a term loan. Over a period of time, compensatory balances have come to mean deposits which average, on an annual basis, 20 percent of the bank's commitment to provide credit. Once credits are established, the bank must be in a position to provide funds for loans up to the aggregate amounts of the lines and commitments in force. For this reason, compensatory balances are related to the full amount of the available credit and not to amounts actually borrowed.

Compensatory balances are by no means dead or static balances. They are turned over in the normal course of business. Averages are commonly raised through deposit of excess proceeds of long-term financing for a period prior to investing in bills, if that is management policy. Deposits may also be increased by borrowing in anticipation of actual need for use of the funds. Deposit of seasonal excess funds, particularly from gas sales, also builds up the average.

What Happens When Money Is Tight

The primary use to which deposits are put is making loans to customers to assist in their financing programs. The remainder is invested in portfolio securities. As loan demands increase in an upswing in the business cycle or seasonal swings, which are characteristic of many industries, bank portfolios have to be reduced, often at a loss, to provide funds for loans. In periods of heavy loan demands, such as we experienced last year and in 1957, portfolios may reach an irreducible minimum required to maintain liquidity. At this stage of the game, banks are "loaned up" and can get only temporary relief by borrowing from the Federal reserve banks. Competition for a dwindling supply of available loan funds becomes extremely keen from all kinds of business.

It is at times such as these that a fair and logical method must be used to correlate available loan funds with borrowers' needs for credit. The compensatory balance record provides such a guide, as in all fairness the banks must first take care of credit needs of customers who, by keeping compensating balances, have earned the right to call on the banks for funds, especially at times when the market is "tight." Usually the demand for bank credit at this juncture is aggravated by unsettled conditions in the long-term market which emphasizes the advantages of flexibility in timing of security issues which bank credit affords.

Keeping compensatory balances costs money. The expense may be likened to the cost of fire insurance. The premiums may look like a waste of money if there is no fire, just as bank balances may seem a needless extravagance unless the value received from banking service, and particularly from bank credit availability, more than offsets the expense of insuring it.

Regulatory Considerations

Most regulatory commissions have taken the position that public utility bank balances have been paid for in advance by the companies' customers, usually in the form of taxes accrued for future payment. For this reason, few cases are on record where any allowance for bank balances has been made in computing the working capital portion of the rate base.

As a result most utility companies, as a matter of prudent management, have operated with minimum cash, often insufficient to maintain compensatory balances with their banks. In the tight-money periods in 1957 and 1959-60, for example, some public utilities found it difficult to obtain the necessary bank credit to provide for their normal requirements. Forced trips to the capital markets at a time of severe unsettlement were the alternative which in many cases proved to be quite expensive. As we emerge from the current recession there is every reason to believe that we shall again experience periods of tighter money.

Regulatory commissions should take a further look at the real function of compensatory balances. It would be just as impossible for a public utility company to do business efficiently without bank accounts as it would be to operate without generators, transformers or a coal pile. If utility companies had to hire the personnel to perform the service now furnished by their banks or pay for it by fee, it is quite evident that cost of service would go up. It seems illogical that commissions should penalize a utility company by ignoring the cost of compensatory bank balances which, in the final analysis, is pay for services rendered to help make utility operation more efficient.

The Functions of the Investment Banker in the Raising of the Industry's New Money Requirements in a Competitive Market

By C. C. Glavin
Vice President and Director, The First Boston Corp.

I BELIEVE it is self-evident that the investment banking industry has played and will continue to play a vital part in the raising of new money for the electric utility industry. The apparent function of our industry is the purchase of your securities and their distribution to investors. But the function of the investment banker can and should be far more than simply a merchant or an impersonal conduit. Perhaps by discussing some of the problems of today and tomorrow in the market place I can better point up the additional functions an investment banker can perform.

Changing Times

Times change and with change come new and different problems and opportunites. To meet the problems and to seize the opportunities there must be flexibility, flexibility in financial thinking and in practice. At times I wonder if many utility financial men have

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not become too orthodox and rigid in their thinking and financial habits.

Virtually all companies in your industry today have achieved a financial soundness sufficient to permit flexibility in selection of financing media. Gone are the days of the 1930's and the Securities and Exchange Commission's ABC formula. Most companies today have pretty well-balanced corporate structures, with enough equity to provide the all-important reserve of borrowing power. Each of you no doubt has arrived at a philosophy concerning a desirable and appropriate financial structure to best suit your individual needs and objectives—perhaps arrived at in consultation with your investment banker. I don't intend to discuss capitalization ratios, but I do feel that once you have established your basic objective you should not hesitate to deviate from the pattern you have decided is orthodox.

Very recently a client of ours had planned to sell a bond issue, which was the obvious thing to do in a normal financing sequence, but with our advice changed suddenly to a common stock issue to take advantage of what appeared to be an excellent equity market. Another client in the same posture changed from a bond issue to a convertible preferred issue to take advantage of an eager market for this type of security at a time when a straight common sale would have been inadvisable because of a temporary poor earnings situation. Still another client sold a large amount of preferred stock, again out of orthodox sequence, after we had suggested the possibility of substantial institutional demand for large blocks of preferred stock for what may well prove to have been a temporary tax situation with the institutions. These three examples were all variations from the orthodox, but variations that paid off handsomely because the issuer was in a flexible financial position and because management of the issuer was flexible in its thinking.

Flexibility in Timing Is Important

Flexibility in timing is equally important. By flexibility of timing I don't suggest a policy of guessing future markets; and I'll warn you right now that this is not a function of the investment banker either. Quite the contrary; do your financing as you need the money. Proper use of bank lines gives you some flexibility in this regard, partly to avoid issues of uneconomic size and partly to avoid going out in storms. But the most important thing is being in position to act quickly. A major step in this direction is doing all possible to change the serious roadblock of the SEC's present registration and processing procedures. There is no good reason why your securities, and particularly your senior securities, should not in effect be exempted from the long drawn-out SEC processing. In cases of companies with securities listed on a national securities exchange, where security issuance is approved by a state or Federal regulatory body, where the company has been through SEC processing before, where the quality is clearly superior as measured by S-9 standards —some combination of these factors should be the basis for automatic effectiveness or effectiveness by notification.

At present, the SEC is overwhelmed with new issue registrations, and many voices have been raised to seek solutions to the log jam. The suggestion I make would help their problem, but above all it would help your industry, and I would hope that you would support this type of program through your industry body and by direct appeal to your Congressional representatives. I am sure this type of procedure can be effected by administrative rulings under the Act.

Finally, there is the subject of flexibility as to the method of sale. I don't want to re-argue the subject of competitive vs. negotiated business. Both methods have their place and their time. But it is, in my opinion, highly desirable that you do everything possible to keep within management discretion the selection of the best method of sale at a given time. To the extent that you are subject to regulatory requirements for competitive bidding, you should fight to convince your regulatory authorities that all interests are best served by an open mind. I can think of a number of cases where clients of ours have abandoned plans for a competitive offering of bonds or preferred stock and have done private placements instead. These moves have made quick action possible and, in restrospect, proved to be a significant benefit. A second area is freedom of choice to meet market conditions. Not infrequently an issue will require special selling efforts and in such case a negotiated sale will inevitably be better for you than a sale at bidding.

We are also witnessing a growing problem—the problem of size. Companies who sold $10 million issues 20 years ago are now selling $20-$30 million issues, and more numerous are the issues of $50 million and more. As your growth continues, this trend to greater size will continue. You should realize that size in itself creates problems to the investment banking industry. Generally speaking, there are standby groups organized to bid for a company's bond issues, and more and more we are witnessing the necessity of these groups merging to bid on the larger issues. There is definitely a limit to the amount of underwriting risk that an individual firm wants to take and the greater risk the more cautious he will be on price. It follows that this atmosphere has a cumulative effect both within the bidding group and within the investment banking industry as a whole as the size of an issue increases. I would not attempt to measure price differentials between the medium and large issues, but I do know there is a difference and I also feel strongly that if the issue gets large enough, competitive bidding is not your best answer.

I can't help but think of the $250 million issue of AT&T. In this case it is hard to conceive of more than two bids and it is equally hard to believe that either of the two groups can exercise the kind of muscle that is in your best interest. How much better it would be for an issue of this size to use the underwriting and selling capacity of the whole investment banking in-

dustry under competent leadership in a negotiated sale. This, of course, is an extreme example, but the problem grows as issues get bigger, and the effect on you is simply a matter of degree.

As you think about these areas where flexibility is so important—flexibility as to type of issue, flexibility as to timing, and flexibility as to method of sale—I nope I have pointed up a most important function of an investment banker, namely, the function of suggestion and advice. This service is available to you as an integral part of a continuing relationship, based on mutual confidence, between you and your investment banker.

The Small Investor Eyes Public Utility Securities

By W. A. Doyle
Financial Writer, The New York World Telegram & Sun,
and author of syndicated column, "Daily Investor"

I DON'T have a pat formula to solve your financial problems. The relative merits of different types of financing are best left to the other panel members. They will give firm, fast and sensible financial reasoning for handling of financing in special ways, under specific circumstances. These men are experts in their fields.

You also know your business. And a big part of your business has been financing—the raising of new money to meet the increasing demand for electricity. You don't need me to tell you that raising new money for new plants and equipment is going to be an even bigger part of your business as the years roll by.

I don't claim to be an expert on new financing. I have always operated on the theory that there is no such thing as an all-encompassing knowledge of things financial. There are only varying degrees of ignorance.

My column draws anywhere from 600 to 800 letters a week, from the readers of over 120 newspapers. These letters help me reduce my degree of ignorance about the thinking of the ordinary investor—the guy who provides the monetary fuel for American corporate enterprise. Through these letters, I feel that I get pretty close to the American investor. From time to time I may be off base in my interpretation of the average investor's thinking. But there is one thing about which I am reasonably certain. It's how the people who write to my column feel about investments in general and utility stocks in particular.

A Pitch for Equity Financing

I'm here to make a pitch for equity financing and to urge increased efforts to spread stock ownership among even more millions of Americans. My reasons for this are twofold—both selfish and altruistic. That's a tough combination to come by. But I can explain.

I'm selfish about this for obvious reasons. As more stock becomes available to the investing public, and as more people become stockholders, it's not unreasonable to expect that more people will be interested in reading my column. More editors will be likely to buy the column. So, on that basis, I am selfish—pure and simple.

But there's more to it than that. And this is where the altruism comes in. I firmly believe that we must continue to spread stock ownership if we hope to preserve our free-enterprise, capitalistic system.

Now, we're all worried about "creeping socialism"—at least those of us in our right minds are worried. We can tear our hair, wring our hands and even rend our garments about this all-too-obvious trend. But many of us don't realize that this tide of creeping socialism can be turned back. How? By galloping capitalism. That's how.

The number of stockholders in this country has increased at a fantastic rate in the post-World War II period. It is now estimated that there are some 16

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million stockowners in these United States. That estimate is an updated figure, based on a so-called "census" of stockholders conducted by the New York Stock Exchange a couple of years ago. I have no idea as to how accurate that "census" and its updated estimate are. Personally, I have a strong hunch that the 16-million-shareowner figure is on the low side. I made a lecture tour through the Midwest shortly after the exchange announced its "census" figures. Every town I visited produced strong evidence that it had more stockholders than the exchange census gave it credit for.

How many stockholders are there in this country? I have no idea. Twenty million might be a good figure. The actual figure might be higher. It might be lower. No matter how many millions of Americans you count as stockholders, one thing is certain. There just aren't that many millionaires in the country. The medium-salaried people and the little guys are getting into the act all the time.

It's easy to say that this happened before—in the 1920's. But the average stockholder of pre-stock market crash days was a speculator, not an investor—whether he knew it or not. But most men and women who are putting their money into stocks today want to be successful investors—in the true sense of the word. They know that to be successful investors they have to be informed investors.

We like to think that one of the ways they can become informed investors is through my column. The column is intended to be an educational thing—to inform investors and potential investors. Charlie Haskell, our *World-Telegram & Sun* financial editor, has been very specific about this. The column was his idea in the first place. He's not about to let the column turn into a tout sheet. He has always stressed that the column must be basic—informative.

I'm happy to report that, judged by the letters addressed to the column, my most informed readers seem to be utility company stockholders. I get some awfully wild letters, including some that might seem almost stupid at first reading. The degree of ignorance about stocks and our free enterprise system is still quite large, as far as many Americans are concerned. Nevertheless, utility company stockholders seem to have a better grasp of the situation than most other people. This may seem strange to those of you who have handled stockholder correspondence. But you should read some of the other letters—about non-utility companies.

And, again judging by the letters from all types of stockholders, the utility stockholders seem to be more contented stockholders. Naturally, I get all kinds of complaints, about all kinds of companies. Very few are directed at utility companies. One steady complaint concerns the "high" salaries and other compensations paid to top corporate officials. It may be some consolation to you to hear that I have never received complaint number one of that kind from a utility company stockholder.

There is one that popped up fairly recently. It's from stockholders of those utility companies which do not have pre-emptive rights. I know. You can present all kinds of "good arguments" against pre-emptive rights. But the lack of pre-emptive rights makes an awful lot of stockholders unhappy.

Most Utility Stockholders Are Happy

As I say, most utility stockholders are happy. Some are almost delirious with joy. Most of them have forgotten (if they ever knew) about the old high-binding holding companies. Just recently, I carried in the column a letter from a man who pointed with pride to how well his utility stocks have done in market price, dividends and earnings. He wants to know why more people don't "wise up" and buy those "wonderful utility stocks."

Because the column deals in representative letters of general interest, I assure you that this one wasn't far-fetched. It was an actual letter from a reader. Many other readers have written in to say much the same thing.

It's pretty safe to say that each stockholder represents at least two votes on the American political scene. As stockholders grow in number, even Mr. Udall will have some second thoughts about zeroing in and blasting away at you. If we can speed up the increase in stockownership, we'll all be safe.

I don't suggest that you knock your capital structure all out of whack by doing no financing other than equity offerings. But shouldn't you lean toward stock offerings as much as possible—as a matter of corporate advancement and, perhaps, even self-preservation? After all, it's up to you people to provide the stocks to make the spread of stockownership possible.

Rincliffe Honored

R. G. RINCLIFFE, President of the Philadelphia Electric Co., received the 1961 award of the Philadelphia Public Relations Association for his promotional efforts on behalf of this city.

He is the eighth recipient of the award, given annually to "that citizen of our community who by his acts and abilities has brought an outstanding measure of honor and renown to Philadelphia."

More than 700 persons, including local and state government officials and business leaders, attended a luncheon in his honor at the Bellevue-Stratford Hotel.

Mr. Rincliffe was honored for his company's national advertising program promoting the Port of Philadelphia. He was also cited for his role in uniting utility companies throughout the country for development of peaceful uses of atomic power.

Area of Opportunity

(Continued from page 204)

So, we are on the threshold of major breakthroughs in the field of distribution. We have the knowledge and the machinery equal to the enormity of the task.

What's likely to come of it?

Let's step ahead into that community of tomorrow on the Total Electric Frontier and study the distribution system (Fig. 5).

Looking down a residential street in the fashionable suburbs, (Fig. 6) we notice the absence of wooden poles, cross arms, and service paraphernalia. One overhead line joins the street lights, and that seems to be the only visible evidence of electrical distribution.

This impression is correct, as it turns out, because we have combined functions. In the base of the street lighting poles, we have integrated the distribution transformers. Service to the homes is underground.

In another section of the city, even the overhead cable has been placed underground. This wasn't as expensive as you might think, since improvements in cable design and insulation did away with the need for concrete ducts and manholes.

An unassuming installation inside the garage is the watt-hour meter. It is a static-state device which contains no moving parts.

Even more important—the meter is read from a remote center automatically (Fig. 7).

At that center, a computer figures the bill and sends it out. It also records the demand and energy use from individual meters and monitors distribution transformers and circuit loadings, as well as voltage drops. The same computer records the history of energy use, and predicts future changes in system design that will be necessary to keep pace with the loads.

Meanwhile, back at the main office, a master computer is receiving information from the sub-computers, and constantly optimizing the system. The system planning engineer is an apprentice from the local trade school. His principal duty is to bring the output sheet from the computer to the president's office every morning.

The output sheet tells the president at a glance what the revenues are, what they will be at any given time in the future, what changes will be necessary to keep up with the demand, and what it will cost to make them. Of course, service interruptions are unheard of. In case of a fault anywhere in the system, the monitoring computers instantly redirect circuits to maintain service and, at the same time, pinpoint the location of the trouble.

So you see, distribution is no problem in this total electric world. Costs of the system have been drastically reduced because every addition to the system was predicted years in advance, and every dollar spent produced optimum results.

Fantasy? No indeed. The error, if there is one, will inevitably lie in the conservatism of these predictions. There is nothing in this distribution system of tomorrow that we could not, with a little effort, build for you today. What the next 10 or 20 years will bring I cannot even imagine. I am certain, however, that progress will exceed our most imaginative dreams.

But this much is sure. You are going to spend $40 billion on distribution systems in the next 20 years, one way or the other. By giving distribution the same careful and painstaking consideration that you put into generation and transmission, you will find you can produce even more wondrous results.

There are many good reasons to make distribution a major partner in your business. The best one I can think of, however, is what I started out to say—There's gold in them thar poles.

Will Russia Catch Up?

(Continued from page 210)

—not only as it affects our relations with Russia, but as to whether such a system of government direction would be useful to us in our aim to maintain world leadership.

First of all, the facts show that America, the principal exponent of the free economy, is by a wide margin outproducing Russia, the principal exponent of the government-planned economy. The reason we do so is that the individual citizen produces more, creates more, invents more, and strives harder when he is free to decide how he shall dispose of the fruits of his own labor, where he shall work, and in what vocation. Labor productivity is one of the best indices for measuring the relative efficiencies of the two systems. Labor productivity in Soviet industry averages 40-50 percent of productivity in the United States (Fig. 14).

In the United States we can, with reasonable confidence, deny ourselves the pleasure of spending our money in order to save and invest in the machinery of production with the hope of earning a reward. This is the greatest stimulant to new capital formation that has yet been devised.

A second stimulant to efficient production is competition which is lacking when government is the sole supplier.

All of these stimulants to efficient productivity we have here in America, but they are lacking in Russia. Under the government-planned economy, as in Russia, the individual is not free as he is subservient to his government. He is subservient because he is dependent upon government for the goods and services he needs for his well-being. Under the free economy the individual is not dependent upon government for his welfare; therefore he is not subservient to government and therefore he is free—free from government. Let us carefully guard against inadvertently gravitating towards the government-planned economy with its lower productivity.

Atomic Futures

By Maj. Gen. K. D. Nichols (USA, Ret.)
Consulting Engineer

WHAT are the short-range and long-range prospects for atomic power? From a short-range point of view, how soon can we look forward to having atomic plants in the 300-400 megawatt range on a competitive basis with fossil-fuel power stations in high-cost fuel areas of the United States? What are some of the factors that affect both the short-range and the long-range prospects for atomic power?

Looking at the short-range prospects first, only the water reactors, gas-cooled reactors, and water-cooled graphite reactors will be considered. These three types are the only ones that have reached the point where sufficient data are available now, both from a construction and operation point of view, to base sound estimates of cost for producing power.

Basis of Definition

I would like to define, in general terms, the basis for saying whether atomic power is or is not competitive with fossil power in high-cost fuel areas. For a high-cost fuel area I refer to fuel costs of 35 cents or over per million Btu. In the United States, primarily in the New England and California areas, there are more than 15 million kilowatts of power generated with fuel costs of 35 cents or over per million Btu. This high fuel price as compared to the rest of the country is due to the distance of these areas from good sources of fossil fuel, and the resulting increased cost due to transportation. Of this large block of power more than 10 million kw are produced in plants of 300 mw or over. Hence, if atomic power plants of this size can compete in these areas there would be a sizeable market for such plants. In comparing atomic power plants with fossil-fuel plants, I have considered annual fixed charges at 14 percent and the use factor at 80 percent. I recognize that some will consider a use factor of 80 percent as too high, but that figure seems to have general acceptance for comparative purposes.

In considering the three types of reactors for which extensive experience is available, let us first look at the gas-cooled natural uranium. This type of plant has been developed primarily in England and in France. In England we have had operating experience for the Calder Hall type of plant since 1956. Moreover, the program has been of sufficient size to acquire reasonable cost data for construction of large plants. The most up-to-date data pertain to the Bradwell Station, the first unit of which is due to go critical this month. This plant consists of two units, and will produce 330 mw gross—300 mw net—when in full operation in mid-1962. The cost of this plant is now set at $162 million, which represents a cost of $490 per kilowatt for the gross installed capacity, or $540 per kilowatt net installed capacity. These high capital costs, even with anticipated future reductions, make this type of natural uranium plant unattractive for use in our high-cost areas.

In England, with its cost structure, it is stated that atomic power will fall below the cost of conventional power as base load by the end of this decade. However, in England it is now generally recognized that greater economies will be achieved only by the use of higher temperatures and slightly enriched uranium. Experience in construction or operation of such advanced plants is not yet available, hence the English program to date, although extensive, does not give us a short-range solution for competitive power in the high-cost areas of the United States.

The next type of plant considered for power for which there is extensive operating experience, at least for the reactor part, is the proposed dual-purpose plant at Hanford. There is probably more operating experience for the Hanford-type, water-cooled, graphite-moderated reactor than for any other type. However, we have no experience for utilizing this type of reactor for producing power. After many engineering and assorted studies it has been concluded by some that it would be economically beneficial to generate by-product

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electric power with the new plutonium production reactor now under construction at Hanford.

The electrical plant found to be most economic in the latest studies would have a capacity of 650 mw when operating as a dual-purpose reactor for the production of plutonium and by-product power and 760 mw when operated for power only. The estimated cost of the additional electrical plant is $95 million.

By considering that previous monies allocated for building and adapting this plant to power are written off, and by taking advantage of forecast costs for manufacturing U_{235}, and other considerations, such as the possibility of marketing on a long-term basis certain short-term excesses of power now available in the Pacific Northwest, it has been concluded that certain economic benefits would accrue to the government by adding electrical facilities. This plant, if built, would, in effect, be the largest single atomic electrical generating facility in existence or planned. Although proceeding with this project may, in the minds of some people, increase our national prestige, I doubt if the experience gained will add much toward achieving our short-range objective of economic power in the high-cost areas of the United States.

More Optimistic Forecast

In regard to water-cooled and water-moderated atomic plants, the forecast is far more optimistic. In fact, I personally believe that if certain courses of action that are reasonable are followed we can achieve competitive atomic power in the high-cost areas prior to the Atomic Energy Commission objective date of 1968. In the United States, due primarily to our early start on naval objectives, we have acquired a wealth of experience with water reactors. At least two of our leading electrical manufacturers have now reached the point where they are willing to back up their confidence concerning this type of reactor with proposals for turnkey fixed-price plants.

I will not try, at this time, to resolve the relative merits of closed-cycle vs. open- or dual-cycle plants. In Chicago at the 25th Annual Convention of EEI on June 3, 1957, I made the statement that the boiling-water type of reactor and the pressurized-water reactor may very well tend to drift together with advantage being taken of the chief merit of each. I still feel that as time goes on water plants should be considered more as a single type, whether closed-, open-, or dual-cycle. Appraisals should be made of the relative merits of components and combined features of a proposed plant, and utilities should select the manufacturer more on the basis of price and performance, and confidence in the designer and manufacturer, rather than whether or not it is open- or closed-cycle, or a combination of both.

In considering the closed-cycle water reactors, the United States since 1953 has completed and operated at least three successful generations as typified by the naval plants, Shippingport and Yankee. The wealth of data accumulated from the construction and operation of these plants provided a firm foundation for the still-needed improvements that will allow continued future reductions in power costs. The Indian Point plant being built by Consolidated Edison Co. of New York, Inc., and the Selni plant being built by Edisonvolta in Italy will furnish additional experience and information.

The present state of the art for this type of plant is probably best exemplified by the proposed design for the SENA plant at Chooz, France, rated at 259 gross mw electrical, and the Southern California Edison Co. plant in the United States rated at 375 gross mw electrical. The Southern California Edison plant represents what Westinghouse considers can be done at this time with this type of reactor. The present proposal pending before the Atomic Energy Commission asks the government for financial assistance for research and development, and waiver of use charge for fuel for five years. The capital cost for this plant is approximately $78 million.

The Southern California Edison Co. considers that this plant would be economically competitive with conventional plants over its lifetime. If the research and development for this plant is done and construction completed, as it can be by 1965, the experience derived from it should be an adequate basis for selecting and building plants of this type that are competitive in the high-cost areas. Hence, we can predict that the closed-cycle water reactor can meet the short-range 1968 AEC objective. In this regard, Westinghouse has extrapolated data to a "fifth generation" plant for 1968, and predicted performance for a 450-mw unit competitive with the same size coal-fired plant in the 35-cent per million Btu area.

In the open- or dual-cycle type of water reactor progress is also being made. The state of the accomplishment for this type of plant is represented by the Commonwealth Edison Co. plant at Dresden. Although some difficulties and defects have been encountered in this plant, there is no reason to assume that they cannot be solved. A representative of General Electric has stated that technological progress permits them to design and build 400-mw plants for start-up in 1965. The prices given per kilowatt for installed capacity and kilowatt-hour costs would be competitive with coal-fired plants in the 35-cent per million Btu area. I would hope that arrangements can be made for the timely construction of such a plant by an investor-owned utility, for I am a strong believer that only by building can we really determine what the costs of construction and operation actually are.

The progress made in water reactors is encouraging. Technological progress is such that we can attain a successful accomplishment of the AEC short-range objective of competitive atomic power in the high-cost areas on or before the 1968 target date. Whether or not we do attain this objective depends more on administrative and political factors and the support of investor-owned utilities rather than on technical factors. In my opinion, the necessary plants can and

should be constructed, and every support should be given by government and the utility industry.

Looking at the long-range picture, I am reasonably optimistic that atomic power will make considerable inroads into the 25-35-cent per million Btu, or medium-cost fuel areas, in the early 1970's. From the standpoint of the atomic power industry this accomplishment would be a real achievement because it would open up about half of the utility market. Looking at a 10-year period from 1970-1980, it is reasonable to assume that 10-20 million kw of power plants of a size of 300 mw or over will be built in the high-cost, 35-cent per million Btu area, and 40-60 million kw will be built in the medium-cost 25-35-cent per million Btu areas. Certainly if the atomic industry can capture all the large plants in the high-cost area, and a part of the large plants in the medium-cost area, there would be sufficient market to sustain reasonable development of the art and development of manufacturing techniques. This would represent a happier day for the atomic manufacturing industry.

Little Doubt of Progress

I have little doubt that from a technical point of view we can attain the progress needed. The best method to attain this progress is more difficult to predict. Certainly in the water reactors we can attain many more improvements by research, development, and engineering, and also additional economies can be attained just by increased size alone. Plants from 500-1000 mw, using dry and saturated steam, although this horrifies some of our advocates of more efficient steam cycles, appear to be feasible. Likewise, it can be expected that progress will be made in developing atomic superheat. A combination of a large base plant with a separate atomic superheat plant initially may turn out to be most economic. Later integral superheat or some variety of pressure-tube reactor may turn out to be better. Certainly progress will and should be made in these lines of endeavor.

In the gas-cooled types of reactors we should be able to use higher temperatures, coupled with enriched and improved fuel, to improve the economics. Likewise, progress may be made with the sodium-graphite system, particularly in large sizes, and the organic-moderated. The fast-breeder cycle may turn out to be the best way to utilize plutonium and certainly will have its place ultimately as a way to get the most power out of available supplies of uranium.

One of the big problems facing the utility industry is that no one of these reactor types is the obvious or final answer to the most economic power. Care must be taken that the utility industry does not scatter its support too widely. Care must be taken to insure that only the number of projects that the industry can adequately support are undertaken. There should be a follow-through on concepts well along to develop the most information and experience from them, rather than jumping too rapidly to the support of promising but little-advanced projects. Also, a greater effort must be made to develop all aspects of the fuel cycle. An integrated power industry must ultimately be able to use plutonium and U_{233}, as well as U_{235}, as a fuel.

There are certain economic, administrative, and political factors that may make it easier or more difficult for atomic power to compete with conventional plants. First, we must recognize that atomic power is competing with a moving economic target. No one expects that technical improvement in fossil-fuel plants will cease. We are constantly building larger and larger and more efficient conventional plants.

Moreover, our shipping industries are recognizing that transportation costs must be reduced if fossil fuels are to compete with atomic power in the higher cost areas. The recent drop in price of fossil fuel in the New England area may be attributed in part to the competition of atomic power. In the last three years the price had dropped more than 15 percent.

Our coal companies are now more alert to the competition offered by the atom and are making every effort not only to hold or to reduce the price on coal, but to encourage reduction in freight rates, and are also making efforts to develop new ways for transporting coal. The Consolidation Coal Co. has made a pioneering effort in liquefying coal and moving it by pipeline. The commercial line existing for the supply of The Cleveland Electric Illuminating Co. has been in operation more than three years. The operating factor for the last two years has been 97 percent. Consolidation Coal is optimistic at this time that it could build a much larger pipeline for supply of the Atlantic Coast at a considerable saving over normal transportation.

The company has hopes that it can make economies by increasing the size of the pipeline and by better solution to the de-watering problem prior to use in the power plant. If such a pipeline is installed to the East Coast, transportation costs will be reduced and the competition afforded to atomic power will become greater. Certainly such competition is good for the industry and good for the United States. The important objective in the United States is and should be the most economic power available for each area, regardless of technical methods used to achieve it. Likewise, progress is being made in the transmission of electricity at lower costs. All of these developments make it more difficult to predict the exact date that atomic power will be competitive in any given price area, but the trend will be to push relentlessly in toward our good sources of fossil fuel.

There are also political and administrative factors that may have considerable effect on the actual cost of atomic power. Take, for example, the fuel supply. This is presently a government monopoly. I had the pleasure of representing the Atomic Industrial Forum to make a review of AEC costs in this area in 1959. Certainly it has been recognized for some time that the price of U_{235} could be reduced. Practically every factor that went into establishing the price of U_{235} in 1954 has been improved.

For example, the additional complex of gaseous diffusion plants under construction at the time prices were established in 1954 was estimated to cost approximately $2 billion. Subsequently they were completed with a savings of approximately $600 million. Likewise, there has been a significant decrease in the price of uranium ore. The government encouraged the development of mining and milling uranium, and such encouragement necessitated the prices contracted for. However, most of these contracts expire in the relatively near future, and the average cost of uranium feed should decrease for the next 10 years, and ultimately may stabilize somewhere between $5 and $8 per pound of U_3O_8. Right now large quantities of uranium may be obtained for less than $5 per pound of U_3O_8.

On May 29 the AEC announced a price reduction for U_{235}. The new price is based on a U_3O_8 price of $8 per pound. Subsequent reductions may be in order in the future if the average price of ore continues to decrease.

The buy-back price for plutonium for fuel use after 1963 probably will change in the same ratio as U_{235}. Use charge is increased from 4 percent to 4¾ percent to represent the increased cost of money since 1954. The net effect of bringing the pricing policy up to date should be beneficial to the industry and result in a net reduction in terms of mills per kilowatt-hour.

Linked to the new price reduction is the question of private vs. government ownership of atomic fuel. Some parts of the utility industry and some government representatives have advocated private ownership of atomic fuel, with the view of avoiding government monopoly, and decreasing government regulation in the field of atomic power. It should be borne in mind, however, that private ownership would increase the cost of the fuel inventory and make the disposal of plutonium more difficult. If the fuel inventory is carried at a rate of, say, 11 percent, the increased cost would be in the order of 0.3 to 1.0 mill per kilowatt-hour, which would more than eliminate the savings resulting from price reduction in U_{235}. Of course, this disadvantageous effect could be minimized by utilizing some system for gradual transition to private ownership, perhaps by permitting a deferred installment payment somewhat similar to the Euratom Agreement. A suggested method would be to make private ownership or leasing optional for the next 10 years, and after the optional period to require the inventory to be purchased and paid for on an installment basis over the succeeding 10 years.

This deferred installment plan would reduce the increased costs of private ownership to approximately one-quarter of what they would have been without such a transition period. However, the industry should recognize that private ownership of fuel will not eliminate regulation of the atomic industry. It is difficult to foresee a truly free market in U_{235} and plutonium because the market would of necessity be limited to licensed consumers. Moreover, private ownership of plutonium would create a difficult financial and marketing problem during the period prior to the time experience and demand establish a true fuel value.

Another factor that could have a beneficial effect in the atomic industry would be to permit the toll processing of private uranium in government gaseous diffusion plants. Although the reduction in the price of U_{235} eliminates much of the former apparent savings of toll processing, at least the acceptance of the principle by the AEC would be one more step toward the ultimate objective of having as much of the fuel cycle as possible outside the present government monopoly.

A remaining question concerns the difficulty of the industry in predicting future prices for the over-all fuel cycle. Take, for example, plutonium. The question of the proper government price for plutonium has been complicated by the difficulty of predicting our military requirements, the difficulty of predicting the true fuel value of plutonium, the desire to avoid influencing technical design by a high weapons price, and also, I am sorry to say, by certain political considerations that are difficult to justify. Perhaps our over-all pricing policy would be simplified for the industry and also for the AEC if we were to continue to forget the seven-year provision for prices and have an annual price redetermination after 1963.

I would suggest that each January the AEC would establish a price for U_{235} for the ensuing fiscal year, based on the actual cost of production for the current year. If toll processing is permitted, these toll charges would be established at the same time. Likewise, each January the AEC would announce the price to be paid for plutonium for fuel and military use for the ensuing fiscal year.

So long, and only so long, as there is any military requirement, the price for suitable domestic production for military use could be based on the actual current costs of operating the government plutonium plants. Likewise, each January the price for plutonium for fuel use would be established by maintaining the present ratio with the price of U_{235}. This procedure would be continued until such time as there is a better technical basis for establishing the value of plutonium for fuel use.

In regard to supply of U_{235} for foreign use, bilateral agreements should be as consistent as possible with the domestic arrangements. The only departure suggested is that foreign plutonium be purchased only on the basis of specific quantity commitments agreed to in the bilateral, or from time to time, and the price be the current fuel price.

Another administrative factor that may determine the rate of progress atomic power makes in becoming competitive is the question of safety and regulation. Certainly all of us want safe atomic plants. However, there are ways to provide safety other than just by isolation. If the trend should continue toward greater isolation rather than toward engineering safety into

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Tomorrow's Managers

By R. M. Besse
President, The Cleveland Electric Illuminating Co.

IN the long run, no company can be any greater than its management, and no industry can be any greater than the collective competence of its chief executives. Just as the performance of our companies and our industry today is the direct reflection of the competence of yesterday's managers, so the performance of our companies and our industry tomorrow will be the direct reflection of the competence of today's managers.

There is nothing we can do about the performance of past management or the present qualifications of today's management. But tomorrow's management can be as good as today's managers care to make it.

It will not be easy to achieve high standards. The job of tomorrow's managers will be vastly more difficult than the job of today's managers. Our companies will be bigger, our technical requirements will be more difficult, our competition will be more intense, the environment in which we operate will be more restricted, and the growth in complexity of our over-all operation will accelerate. Margins may be narrower, risks will be greater, and the tools of analysis will be harder to use.

To perform the management function in such a matrix will require better people, better trained, and better organized.

Fortunately the methods of upgrading the management of a company are known to modern industry. And although they are simple to state, they are hard to apply. The varied challenges to our industry are such, however, that we must aim at accelerated improvement of the competence of our managers. This can only be done by the establishment in every company in our industry of a carefully developed plan of action conscientiously administered and continuously reviewed over a long period of years.

An effective plan for long-range managerial improvement must include these things as a minimum:

- A company audit and analysis of the current status in management planning, the depth, quality and potential of the present team, and the future needs in management.
- A careful analysis of the organizational changes and developments expected over the long-range future term.
- A definition of the qualifications of tomorrow's managers for every important job in the company.
- A method of recruitment designed to obtain a full share of the intellectual competence of every college graduating class.
- An established system of internal selection designed to move the best people in the organization to the top and to eliminate inadequates.
- A program of development designed to maximize the qualifications of the best people for the growing requirement of effective management.
- A system of incentives that is competitive with the incentives offered by other industries.

Let's examine each one of these requirements.

Audit the Current Status

If we were planning any other corporate action which took 10 years or more, it would be assigned to our best specialists to research. They would develop a carefully written plan with the aid of their supervisors, and top management would review and approve it. We might call in consultants. Periodic reporting would be established to assure the best attention to its progress. The first step involved in such a plan would be a determination of needs, supported by a careful analysis of what it took to satisfy them.

Nothing short of this approach is adequate in the planning for better future management. As with all planning, this must begin with an analysis of the problem. This requires an audit designed to reveal:

- The jobs that must be filled over a period at least 10 years in the future due to retirement or other turnover and adjusted for organizational change.

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- The retirement dates of those now holding such jobs.
- The candidates for each such job.
- An appraisal of the ability of such candidates to fill such jobs.
- An analysis of what is now being done to assure the improvement of tomorrow's management team.
- An analysis of organization planning principles and organization structure to see if they are properly designed to permit optimum development of competent people.

Until these things have been done by the best talent available, reduced to writing, and reviewed with at least the entire supervisory organization above first level, an adequate start in management development has not been achieved.

Define the Qualifications of Our Future Managers

If tomorrow's management jobs are expected to be different, it is pretty clear that the managers will have to be different also. Consequently, an intelligent development program for future managers must begin with a careful analysis of the qualifications we want our future managers to have, or which the work environment of the future will compel them to have.

This should not be left to chance. Neither should it be left to the hazard of varied and conflicting standards within the organization, depending on the whims of individual executives. Instead, it must be carefully developed and thoroughly communicated to all who have responsibility and authority to influence the quality of future management. A good plan calls for a careful statement of qualifications for each management job to be filled. The statement should answer such questions as these:

- How much experience in the same functional field will be needed?
- How much experience in other functional fields is desirable?
- What academic training is required?
- What personal characteristics are important?
- What special skills would be helpful?
- What intelligence level is needed?
- And many more.

If these qualifications are not thought out and written down, there can be no careful plan to acquire and develop the men to match them.

And so a basic question an alert management must ask itself in its planning for tomorrow's managers is this: Have we carefully defined the qualifications we must seek or develop to fulfill the needs of tomorrow's managers of this organization? If we cannot answer this question satisfactorily, we have not taken an essential step to fulfill our obligation to improve tomorrow's managers.

Recruit Fine Talent

The next step in the development of a quality management for the future is a system of recruitment that produces a supply of potential managerial talent adequate to enable us to make good selections for promotion. The raw material of management is manpower and its quality is largely fixed at the recruitment level.

If our management people are to be as good as the management people in other industries, and surely no lower standard is defensible, we must recruit talent that matches theirs. This means that we must obtain our share of the best people with the highest level of training not only from the average schools, but from the best schools as well.

There is a dominant trend in higher education today for the very best students to go to the very best schools, and for the best graduates of all schools to go on to graduate school.

If our industry is to obtain its share of talent relative to other industry we can only do it by effective recruiting of our share of the best students from all schools, including the best schools. And this must be supplemented by active recruiting from those who obtain both master's and doctor's degrees. In engineering, for example, one degree in every six granted is a master's degree or a doctor's degree. Those who receive these tend to be the top students.

If we do not recruit our share of this talent, it is inevitable that our management will not be as good tomorrow as the management of those companies that do recruit it.

This means that an action plan must identify the best schools in the United States for the skills which the company uses. A recruiting plan must then be established to obtain a proper share of the graduates of these schools, including such a share from the top levels of the classes. This is not easy, since other industry is vigorously competing for the same talent. But surely our industry has problems as challenging as those in the industries which actively seek the best men with baccalaureate degrees, as well as good men from the great graduate schools of business, engineering, science, and liberal arts.

A System for Merit Selection

Another important requirement in developing an optimum management team is the establishment of a system to insure that the best-qualified people in the entire organization are selected to fill job vacancies as they occur.

A disturbing tendency in big organizations is to fill vacancies by promoting the best man from the next lower level in the same line of promotion without considering men in other lines of promotion. This is an inadequate method to produce the kind of management team that can succeed in an increasingly competitive society.

The best man for the job may not be in this line of promotion. If he is not permitted to break out of his own line and compete in others, the company cannot move its best manager candidates toward the top. The best man in the company could get stymied behind a young superior and held there to the point of frustration if cross-element promotion were not permitted. Line-of-promotion seniority is a deadening practice.

Far better principles of selection are available. They can only be applied, however, by the deliberate adop-

tion of a system which should include at least these things:

• A good selection system must be based on a formal, well-administered system of annual appraisal designed to identify to management the merit, performance, potential, and relative ranking of all candidates for promotion. It must be designed to assure, as nearly as possible, the application of standards of performance. If this appraisal system is the old-fashioned, broad-judgment, informal, casual-impression type, based on a variety of standards and hit-and-miss records of performance, it will not serve the purpose.

• The second cornerstone of a good selection system is the adoption of the objective that all vacancies should be filled by people who are better than those being replaced. This is an essential if we accept the premise that tomorrow's jobs are going to be bigger and more difficult than today's.

This objective has the great psychological advantage of upgrading managerial selection standards. Anyone seeking to develop a successor whom he concedes to be better than himself is apt to insist on a pretty good man.

Obviously this objective cannot be achieved by short-range planning.

• Another requirement of a good selection system is that all people promoted to supervision above the first level have the potential to compete for the jobs at the next higher level of supervision. Without this practice competition for higher level jobs is restricted and the maximum development of the highest potential people is not achieved.

• Another requirement of a good selection system is the early identification of the small list of people who have the potential to fill the very top jobs in the company. Basic decisions in the normal operations of a company tend to be made by the top 1 percent of the personnel. But the fundamental policies and over-all direction of the company's future tend to be in the hands of a much smaller number, perhaps 1/10 of 1 percent. The people who will fill these jobs in the future are the younger people with the highest potential. They need to be identified as soon as possible in order that their development may be specially shaped to undergird the high responsibility they will ultimately have.

• And the final requirement in selection is the practice of moving inadequates out of supervisory positions as soon as inadequacy is demonstrated. This is not a happy chore, but a manager's "lot is not a happy one" where personnel failure occurs. Without a formal appraisal and review system, regularly checked by top management, this requirement is not apt to be satisfied.

A Program of Development

With needs defined, objectives established, talent recruited, and selection controlled on a merit basis, the foundation is established for the truly long-term job of training and development designed to perfect the best talents of the best people. This requires a carefully developed formal plan.

There is an old truism applicable to almost all planning. It is this: if you haven't written it out, you haven't thought it out. I have never known an important informal program of any kind that could stand the test of a critical reduction to writing without change. Neither have I ever known an informal plan that could be adequately communicated. There is no place where this is more applicable than in the area of management development. These are the things that must be thought out and written out:

• A statement of management development objectives.

• An assessment of future managerial needs.

• A catalog and analysis of management development methods keyed to the different types and levels of managers whose skills must be developed.

• A system of appraisals of the people to be developed.

• An action program to apply the methods to the needs.

• Specific standards or tests to measure the progress of the development program.

To get this done there must be chief executive endorsement.

An effective program of management development is possible only if promoted and supervised from the top down. It is not a thing that grows wild in an organization. The seed must be planted in a well-prepared bed, and only top management can do this.

As with most planning, the beginning must be the formulation of objectives. We are not apt to reach a goal if we do not know what the goal is. We are not apt to develop managers if we do not know the number, type, and quality of managers we need to develop. This involves discussion, analysis, and decision by a management. If this first step has not been taken by a company, the quality of its managers of tomorrow is at hazard.

If the objectives of management development and the specific job qualifications have been developed and written, the next step is for every element of the organization to chart its needs in terms of time and people in order that a specific program may be developed for the human material at hand, with the potential to meet the qualifications, fill the needs, and reach the objectives. These needs should be consistent with the over-all corporate needs determined through the audit referred to earlier.

The next step is to catalog, study, and make available the methods of management development and, then, to train the organization how to select and use them.

We all know that plain job assignments are the most important development medium any of us have available, but not all of us have developed a system to insure the application of this best-of-all methods to our high-potential people headed for tomorrow's managerial posts. This involves the development of an administrative system to make sure that high-potential people are properly supervised; that they are rotated through a carefully selected variety of jobs which aid their development; that they are challenged with the responsi-

bility for decision-making; that they are exposed to the broadening influence of disciplines outside their specialty; that they are confronted with special assignments in new fields of activity; and that they are permitted participation in the multiple areas where an executive must have some competence and basis for judgment.

This is much too complex a requirement to be left to chance or controlled by general edict. It requires a carefully developed, fully understood, continuously administered system to be well done. Informality is fatal to the program.

While on-the-job activity is the great foundation for managerial development, there are many supplemental activities that must not be overlooked in a well-planned program. One of these is the supplemental educational course. American industry has elaborately tested this technique in the last decade. The overwhelming conclusion confirms its value. A management concerned about tomorrow's managers must, therefore, ask itself if it is making adequate use of such programs as are currently offered by Harvard, the American Management Association, the University of Michigan, Columbia, Stanford, Georgia Tech, and many other fine institutions. A management that flaunts the tested experience of others may leave a heritage of weakness in its institution. Any company can test its own performance in this area by a simple inquiry to any of these institutions. Reveal to them what your company is now doing and ask how it compares with the progressive companies of other industry.

Closely related to the campus academic course is the in-plant academic course designed to give a whole organizational team an understanding in depth of the principles, skills, and tools of management. To do this well requires good planning, good staff, and continuous top-level supervision.

Community participation, industry association activities, and personal self-development programs are among the many other tools and techniques available for application in a well-rounded program of management development.

None of these can be effectively applied, however, unless there is a careful system of individual appraisals of the supervisors and professional specialists within an organization. All development is individual and specific to those being developed. If it is done well, it must be done only after an analysis of the strengths and weaknesses of the individual being developed.

This calls for a continuous program to determine what these strengths and weaknesses are, how the strengths can be encouraged and the weaknesses eliminated. It is highly unlikely that any organization is good enough to achieve this result for its people if it does not have a specific system established to get the job done. Our companies have become too big, our activities too complex, and our timetables too full to permit adequate individual appraisals of either achievement or failures as an incident of mere general day-to-day supervision.

If supervisors are not required to develop a specific improvement program for each subordinate involved, discuss it with him, and periodically report progress to a superior, a great majority of them will not do so.

Everything I have outlined calls for the development of a plan in writing. Opinions may vary as to how each one of these things may be done, but there is no room for variation from the conclusion that they cannot be done well if they are not planned well.

If tomorrow's managers are to meet tomorrow's needs, today's management development planning must have top-level priority.

Incentives for Development

Underlying all of this is a need for sound incentives. The competition for the best-qualified managers of the future will be more intense than any competition for managers we have yet experienced in our economy.

During the next 10 years it has been estimated that two out of every three of industry's present executives on the job must be replaced due to retirement or mortality. In addition, industrial expansion will add new requirements for managers at the rate of one for every three managers today.

Competition during this decade will be for replacements to fill a number of executive positions approximately equal to those we have today. The replacements will come primarily from our present lower-level management ranks and near-term recruitment. There will not be enough good people to go around. There will, therefore, be a mad race for the quality talent that emerges.

Both the quantity and quality of the supply for any specific company will depend in part on the quality of its development program between now and the 1970's. But no matter how well this is done, the company that successfully competes in obtaining quality managers tomorrow must establish those incentives which both attract and retain the kind of managers needed to meet the intensified challenges of tomorrow.

We must, therefore, make sure that the incentives in our industry at least equal those of other industries with which we compete for talent. This is true at the college recruitment level and at every level between there and the top executive's position. If we do not meet this test, we will not have the players to qualify us for the big leagues, much less a championship team within the big leagues.

Just as well-planned recruitment is essential to obtain talent, well-planned incentives are essential to retain it. And, in addition, well-designed incentives impel better performance. Also, without the incentives calculated to retain high-potential people, turnover experience will inevitably result in an adverse selection.

Here again adequate incentives cannot be properly developed and applied as an incident of a mere general belief in them. A carefully developed and continuously supervised system is required. It ought to be in writing and it ought to include all the basics of good salary administration, as well as the special incentive features

(*Continued on page 258*)

For a Clear Image—Keep the Story Simple

By A. L. Cole
Vice President and General Manager, Reader's Digest

IT was just a year ago at the EEI convention in Atlantic City that the *Reader's Digest* announced several Public Service Awards for the best *Street Lighting Improvement* programs.

What happened was this: In the June, 1960, issue of *Reader's Digest* we published an article entitled, "How to Make Streets Safe After Dark." Then, through the General Federation of Women's Clubs, we made cash awards to four cities which had been judged to have developed the best new lighting programs. The women's clubs believed that these awards resulted in a definite stimulation to efforts to improve street lighting. They then asked us if we would offer similar awards for 1960-61. We were glad to do so. The winners of these awards were announced recently at the Federation of Women's Club's convention in Miami, Fla.

From Four to 60

Now, since our trial marriage in connection with improved street lighting seems to have been successful for all concerned, I am happy to announce a renewal for another year with the awards increased from four to 60. The additional awards are being made with the cooperation of the State Highway and Safety Lighting Bureau.

As you know, we at the *Reader's Digest* believe in private ownership and private management of *all* business. We believe that every American will live better if the government stays out of business. We know that this is your point of view, but since there are others who think differently, you can be sure that we at least are very much on your side.

We have shown this repeatedly by articles published in the *Reader's Digest* over a period of many years. We doubt that any other magazine has published as many effective articles explaining the advantages of private enterprise to the American people.

And, as an aside, I would like to say that we have a continuing experience with a business owned and operated by the government. We pay the U. S. Post Office approximately $10 million a year for various kinds of postal service. (And we can buy this service from no one else.)

In spite of the fact that the employees of the Post Office are dedicated public servants, the influence of politics and the disregard of the principles of private enterprise result in higher costs and a lower quality of service than I am sure would exist if the Post Office were managed as a privately owned business.

If you are ever inclined to seek new worlds to conquer, why not induce Congress to sell the postal service to the highest private bidder. With the same kind of controls under which you now operate, I will *bet* that the cost would be *lower* and the service *better*.

Most of the articles we have published in an effort to explain the advantages of private enterprise to our millions of readers, I believe, have a direct bearing on your business.

One article was titled, "Pacific Northwest Stands on Its Own Feet." The subtitle was: "Good news for those who believe needless Federal expenditures can be curtailed." One of its high points is the quotation from a declaration by five electric companies: "Our utilities agree that it is their responsibility to take care of the total electric needs of the Puget Sound-Cascade area for all purposes, including industrial growth, and they intend to do so."

Then another article, "How Far Has Creeping Socialism Crept?" which gives details of the "astounding fact that the U.S. government is now operating some 100 separate types of business enterprises in which it

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 7, 1961.

has sunk at least $40 billion." To get out of these businesses, it says, "the government will have to hack through the plausible defenses which inertia and tradition have accumulated over decades."

And another article, "From Washington Back to You" uses the story of the electric industry to bear out its theme: "The economic genius of America is private enterprise; free to take chances, free to make innovations; but regulated by public authority for fairness of methods and for service to the public."

Year after year we have published articles on this general theme. In spite of the fact that we are on your side of the fence in support of private enterprise, we know as you do that the job of explaining, and of convincing people that private ownership and private management will enable them to live better, is not an easy job.

We "communicate" with millions of people all over the world through the medium of articles in a magazine. The *Reader's Digest* is published in 13 languages, is read by people in every country in the world where people are free to read what they please. The circulation of the *Digest* (over 23 million per issue) is larger than that of any other publication in the world.

Obviously the articles in the *Digest* interest people, and they tell us that they find them useful. I can assure you it takes work to make them both interesting and rewarding.

You may be interested in what our approach to the problem would be if we were to develop a new factual article on a subject as difficult as the difference in value to the public between an investor-owned electric service business and one owned and operated by the government.

First we would look hard for *news* as a basis for our headline and lead. That may be old stuff to you, but no one who studies public reaction to written material, whether in articles in magazines or other periodicals, or in advertising, can underestimate the public's interest in news.

We would look hard for the kind of information for our article that would be most applicable to the most people.

In looking over some of your printed material, I noticed a statement to the effect that during the past 25 years (during which time we have had two hot wars—one a World War—plus an unceasing cold war, plus the inevitable inflation that follows all wars) the average price of electricity used in people's homes has decreased by more than half. During this same period the cost of living for other things that go into making the general price level has more than doubled. We certainly would not leave that kind of fact out of our story. It means too much to too many people. And I doubt that you could possibly reprint that fact in your advertising or anywhere else too often.

We realize that you render a great service to the American people, but I wonder if there is any more impressive proof that you help people to *live better electrically* than the story of your continuingly improving electric service with all of its great labor-saving qualities, and all delivered at an ever-lower price.

In developing our article the writer would look for the kind of examples that sharpen up the salient points, and we certainly wouldn't neglect any stories that we could find that show that the people who manage the investor-owned businesses (rather than those owned by the government) are human and very much interested in the public's welfare.

In the September, 1960, issue of the *Digest* we told the story of the almost superhuman effort of the employees of Consolidated Edison at the time last summer when, because of an unusual set of circumstances, all electric power was shut off from a sizable part of New York City. *Digest* readers liked that story.

The second example is an *advertisement* that had the quality of generating the finest kind of public goodwill for a business. That advertisement was read by more people than any other that has appeared in *Reader's Digest* in the six years that we have included advertising in our pages. The advertisement had the headline, "The Telephone Pole that Became a Memorial." There, in front of a simple cottage, stood an ivy-clad pole, left untouched when the telephone crew went to remove the poles on that street and put the lines underground. In the Bell Telephone System's advertisement they explained that they had left the pole standing at the request of a mother who told the crew that it was a kind of memorial to her son. He had planted the ivy there when he was a boy, many years before. Now he was dead overseas, in the service of his country.

In the business of communicating with people, I doubt that any large enterprise in America has done as well as AT&T. Year in and year out, in an extensive and effective advertising program, they publish news of what is being done in their field. They tell and retell in varying forms the story of fine telephone service at low cost. When it is possible to do so, they show their human side to the American people—and the people respond.

No one who has had a chance to judge the quality of telephone service in other parts of the world, and compare it with our service here, can doubt that the Bell System does a great job. And they keep people informed of what they do for them in a most effective way. And the Lord help us if the telephone service in the U.S. is ever owned and managed by government.

I cannot emphasize too strongly the point that the electrical industry may need, more than ever before, to do a good communications job of its own.

Without belaboring your industry problems of the moment, created by much-publicized anti-trust suits, and the New Frontier's emphasis on expanding public power, your industry, I am sure, recognizes the need to do as thorough and effective a communications job as AT&T. I know your industry has long recognized this need for communications, and is already conducting many unified programs such as ECAP and the Public Information Program, but perhaps the need today is even *greater* for an even *more intensive* effort.

Another problem to which I know you are giving a

good deal of attention is maintaining an accelerating growth rate in your business, which is so necessary to enable you to hold down the cost of electricity in the face of rising price indices.

While your industry has historically doubled every 10 years or less, your best efforts will be required to continue this record in the decade ahead. The promotion of electric house heating is one of the mainstays of your very excellent sales plans. Here, too, the *Reader's Digest* has been happy to play at least a small role in acquainting a broad segment of the public with this wonderful new means of climate conditioning American homes. Two articles on this subject have already appeared, and I am sure there will be more to come.

Now, let's come back to that article we were writing. Before the article is finally printed, at least six or seven *Digest* editors go to work on it. One of our roving editors, the late J. P. McEvoy, used to say that "our business was making with the words." He would probably have said that your business is "making with the electricity." What would the *Digest* editors do with the words? They would certainly condense the article to a fraction of its original length. They know people are busy and want to get their information in the shortest possible time. They would work on every sentence to make it thoroughly understandable to everyone. They would check every fact through the *Digest's* extensive research staff. They would point up every salient point made in flat statements or in illustrative anecdotes so that what finally comes through to the reader carries real conviction of truth.

Now for an example of an article which has had that kind of editorial treatment. It is in the current June, 1961, issue of the *Digest* and is titled, "What Is Profit?" It is a special request feature reprinted from an issue of the *Digest* of 1943, more than 18 years ago. It is truly an article of lasting interest. It is only about 1000 words long, less than three *Digest* pages. I think you will agree that it explains profit so that anyone can understand it. And you will agree that readers will be convinced of the merit of the points made and most of them will agree with the suggestion at the end of the article which reads, "Laws that kill incentive and cripple honest enterprises hold back progress. Real profit is not something to be feared because it works for the benefit of all."

The many great companies that make up the Edison Electric Institute render a wonderful service to the American people. And the profit that is made in rendering that service is not something to be feared because it works for the benefit of all.

Actually, all American business, investor-owned and managed as it is, has led the world, including our competitors in the USSR in over-all industrial progress. Sometimes, however, we are inclined to overlook that. You may remember an item that appeared in the *Digest* not long ago that dramatizes the great relative progress of American industry. It was contributed by one of your members and stated that if the United States were to be on the same living standard now as the USSR is, we would have to do the following:

- Abandon 3/5 of our steel capacity.
- Abandon 2/3 of our petroleum capacity.
- Eliminate 95 percent of our electric motor output.
- Destroy two out of three hydroelectric plants.
- Consume 1/10 of present volume of natural gas.
- Tear up 14 out of every 15 miles of paved highways.
- Scrap two out of every three miles of mainline railway tracks.
- Sink eight out of every nine ocean-going ships.
- Scrap 19 out of every 20 automobiles and trucks.
- Destroy 40 million TV sets.
- Destroy nine out of 10 telephones.
- Raze seven out of every 10 houses.
- Move 60,000,000 people back to the farm.

Electrically, if the Soviets are to catch us by 1980, they must complete the equivalent of a new Hoover Dam every 21 days from now until then.

In spite of the wonderful job that the electrical industry has done for the American people and your efforts up to date to communicate that fact to the American people, I hope you will redouble your efforts in that direction in the future and be more effective than ever. This is because I hope very much that it will never be necessary for my family, my business, or anyone else in America in the future to have to secure their electric service from any government.

Atomic Futures

(Continued from page 241)

plants, atomic power may be handicapped in the populated, high-load centers where it is most needed. Certainly it is possible to achieve safe atomic plants other than by building plants only in the desert and utilizing long transmission lines. This trend must be resisted by good engineering design and by a vigorous information policy.

Real progress is being made in achieving economic atomic power. Specifically, we can achieve atomic power competitive with fossil fuels in the high-cost areas prior to the AEC objective date of 1968 if proper decisions are made at this time. Further, there is every reason to believe that early in the 1970's atomic power should be competitive not only in the high-cost areas, but also in parts of the medium-cost areas of the United States. However, these predictions are based primarily on technical progress and present ground rules for atomic power. Administrative and political decisions may affect this schedule, depending on how decisions are made. Likewise, the attitude of the power industry toward support of this new industry may not only affect the rate of achievement, but also the extent and nature of government participation in the program.

World's Fair Progress Report

By E. R. Acker
Chairman of the Board, Central Hudson Gas & Electric Corp., Chairman, EEI World's Fair Committee, and President, Power & Light Exhibit, Inc.

BEFORE discussing any details of the industry's building or exhibit program for the 1964-1965 New York World's Fair, I would like to give a brief impression of the tangible and intangible factors which create the setting in which our exhibit building will be placed.

The over-all theme of the Fair is a basic factor in determining the character of our exhibit and its most significant element is stated in this way: "The Fair is dedicated to man's achievements in a shrinking globe in an expanding universe, his inventions, discoveries, arts, skills and aspirations."

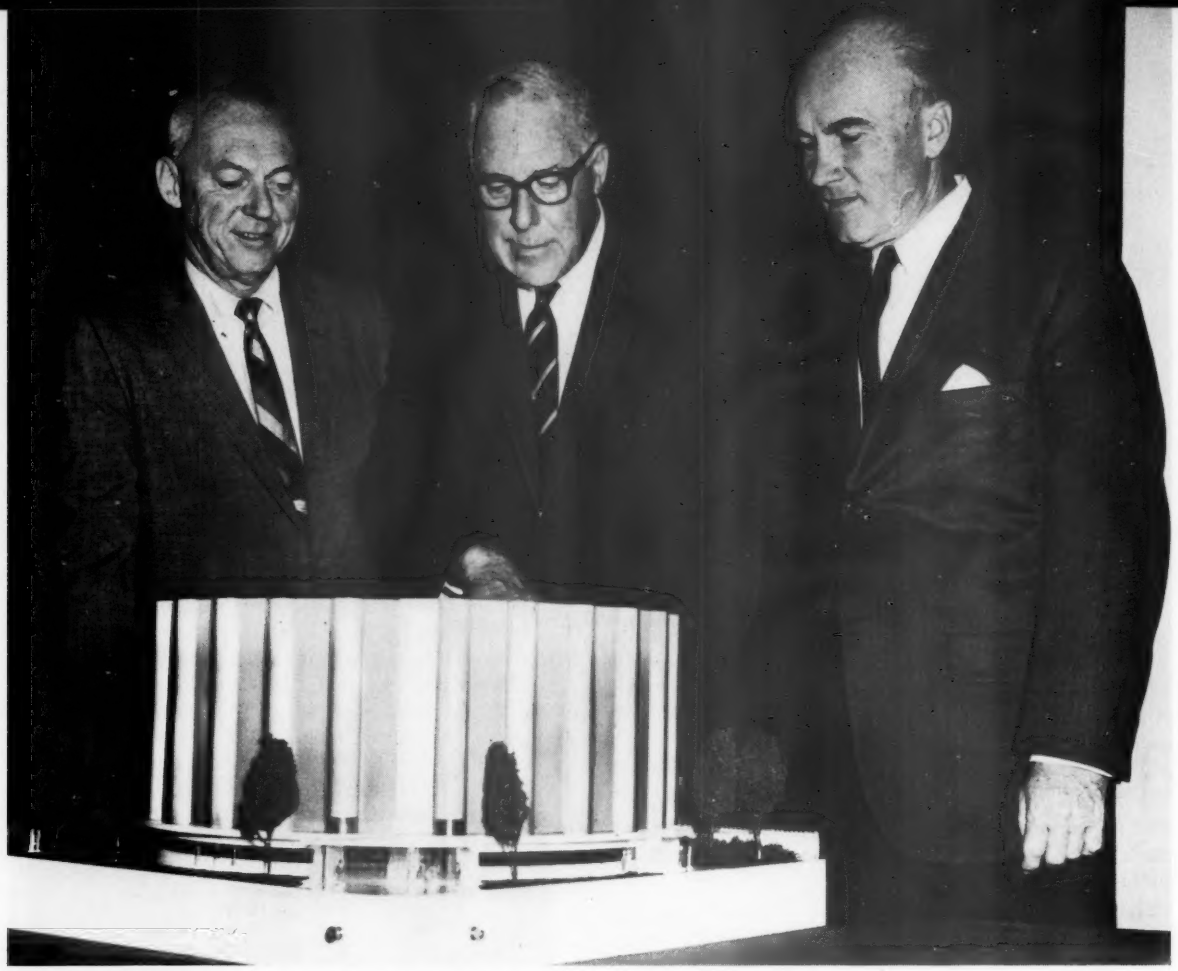
A World Forum of Ideologies

But Robert Moses, President of the New York 1964-1965 World's Fair Corp., has called attention to an important additional aspect of the Fair: "Today a Fair is not only a place to exhibit and see the finest and most modern and significant products of the imagination and skill of all the nations, but a forum in which national ambition and ideologies are combined and fully exploited and promoted. We must be prepared to meet not only the challenges of the nations of the free world, but also the competition of Soviet Russia and its satellites, who will make every effort to prove in this world forum that they are at the very forefront of progress, and that their totalitarian system is capable of doing more and better things for mankind than our democratic system of enterprise. This is the kind of competition that the ingenuity, training, energy, and ability of American industry must meet."

This, then, is the philosophical or, if you will, the ideological setting of all exhibits at the Fair. It will be truly international. Some three dozen countries have thus far accepted invitations to participate—including Soviet Russia—and here it is worth noting that this Fair will come just three years before a

This is the artist's conception of the 24-billion candlepower tower of light which is planned as part of the investor-owned electric utility industry's exhibit at the 1964-65 New York World's Fair. The 24 "light cannons," each of 1 billion candlepower, will produce a light which is expected to be visible from such points as Washington, D. C., and Boston, Massachusetts.

An address before the Twenty-Ninth Annual Convention of the Edison Electric Institute, New York City, N. Y., June 7, 1961.



A model of the tower of light building being planned for the 1964-65 New York World's Fair is inspected by three of the industry's leading executives at the Waldorf-Astoria Hotel in New York during the Institute's 29th Annual Convention. From left are: Sherman R. Knapp, immediate past President of EEI, and President, The Connecticut Light & Power Co.; E. R. Acker, Chairman of the Board of Central Hudson Gas & Electric Corp., Chairman, EEI World's Fair Committee, and President, Power & Light Exhibit, Inc.; and Philip A. Fleger, President of Edison Electric Institute, and Chairman of the Board and President of Duquesne Light Co.

Soviet-sponsored World's Fair planned for Moscow in 1967.

As representatives of the investor-owned electric utility companies in America, we are all well aware of our industry's essential role in preserving and developing our national strength and our free society, and are, therefore, particularly fitted to take up the opportunity and the challenge offered by this great promotional enterprise.

70 Million People

Irrespective of themes and ideologies, however, the most volatile and important factor at the Fair will be —people. On opening day, April 22, 1964, the first of some 70 million people will enter the gates of this magnificent exposition. Most of them will be from the United States, but there will be sizable numbers from other nations around the world.

They will be the same kind of people who go to county and state fairs, to movies and sports events—and who watch television. Their families will be with them in many instances. They will come out of curiosity, to see something different, to be entertained, and, incidentally, to learn. They present to each exhibitor seeking to attract their attention the fundamental challenge of how to impart his message to them.

What is the physical setting to which these people

Figure 1

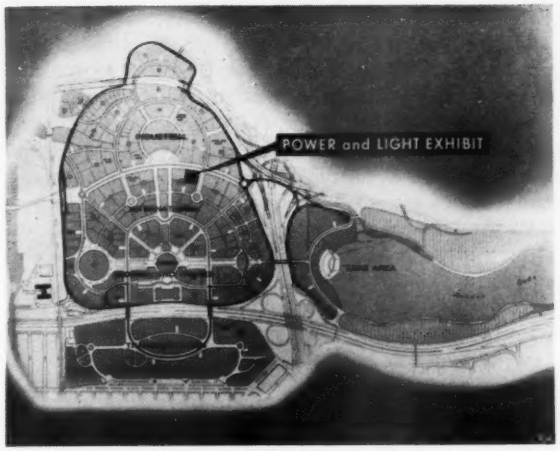


Figure 2

Figure 3

will come? Let us suppose for a few moments that we are approaching the Fair in a high-altitude helicopter.

For ease in orientation, an "X" has been placed on the Waldorf-Astoria in this map of the New York area (Fig. 1). The Fair grounds are located only a few miles from Manhattan. The Fair occupies the same site as the one in 1939-40. LaGuardia Field is near by, and New York's International Airport at Idlewild is not far to the south. It will be easy to get to by air, rail, car—even by boat, since there is a boat basin practically at the Fair entrance.

If we were to hover over the Fair grounds, its general lay-out would be very clear—although obviously it won't be marked as shown in Fig. 2 to indicate the areas occupied by the various types of exhibits—industrial, international, Federal and states, and transportation. The main entrance is to the left, just above the lower semi-circle of industrial exhibit sites. The word "Industrial" is across what will be a lake. In the last fair it was known as the "Lagoon of Nations." It will be one of the focal points of interest, whatever it may be called in 1964. Power & Light Exhibit, Inc., the company set up to administer the industry's participation in the Fair, has an excellent site near the lake on the main traffic artery from the principal entrance. There are additional entrances on the right side of the Fair grounds which will also bring a flow of people naturally to our site.

Many of the nation's foremost business organizations are planning exhibits at the Fair. General Electric is one of these, and we have reason to believe it will be a near neighbor of P&LE. Others at the Fair include AT&T, IBM, RCA, Borden, Corning Glass, DuPont, Eastman Kodak, National Dairy, Institute of Life Insurance, and the American Gas Association.

Since this is a World's Fair, it seems fitting that one of its most prominent features will be the Unisphere (Fig. 3), selected for the theme center. It will be 135 feet high, some 50 feet higher than the permissible height of the exhibit buildings, and will appear

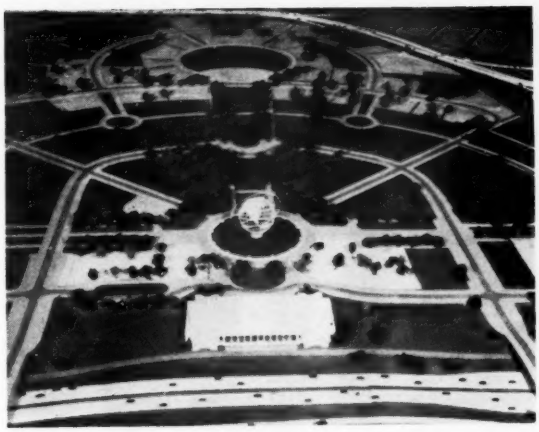


Figure 4

to float above a 350-foot reflecting pool. It is presented to the Fair by United States Steel. The Unisphere is said to symbolize "man's perpetual search for truth and his absolute need of peace through understanding."

Rainbow-Colored Building

A view from the air of a model of the Fair grounds is shown in Fig. 4. On P&LE's site, we plan to erect a tower of light based in a rainbow-colored building 80 feet high—the maximum allowable height.

From the building's superstructure a battery of searchlights will beam the greatest concentration of light ever generated straight up into the sky, and it is expected to be visible as far away as Boston and Washington, D. C. This 24-billion-candlepower beacon should help to focus the public mind with great effect on our industry's exhibit—and on the Fair itself. In developing this concept, there have been, of course, a number of factors to consider—not the least of which involves aircraft. We have consulted with the proper

authorities on this matter and must make sure, of course, that our tower of light conforms to the requirements of the regulatory agencies.

This is admittedly the spectacular and crowd-attracting frosting on our cake, but I don't want it felt that we have neglected the cake itself.

The model of our building has been cut through the middle to indicate what the inside of the cake might be like (photo below). Visitors, on entering the building, will be conveyed on a moving ramp to the top floor of the structure. From there they will begin a spiral walk downward, across flat exhibit floors, separated by easy ramps or steps, to be entertained—and to be educated about our business.

The artist's sketch indicates only the method by which the crowd will be controlled and, in general, how the exhibits will be laid out. In recent weeks, we have received many sets of suggestions from our team of experts, headed by VEK Associates, on exhibit content and sequence, and I assure you that the problem is not what to put in, but what stimulating presentation must be left out.

Selecting the Exhibits

The difficulty of selection is a tribute to the magnitude and scope of our industry, as well as a recognition of the fact that its operations are complex and even incomprehensible from the standpoint of the general public. Another difficulty stems from the fact that new inventions and developments in our industry come so fast that we cannot firm up our over-all exhibit plan until the last possible moment. What we view as exciting and futuristic in 1961 may be only comfortably old-hat in 1964.

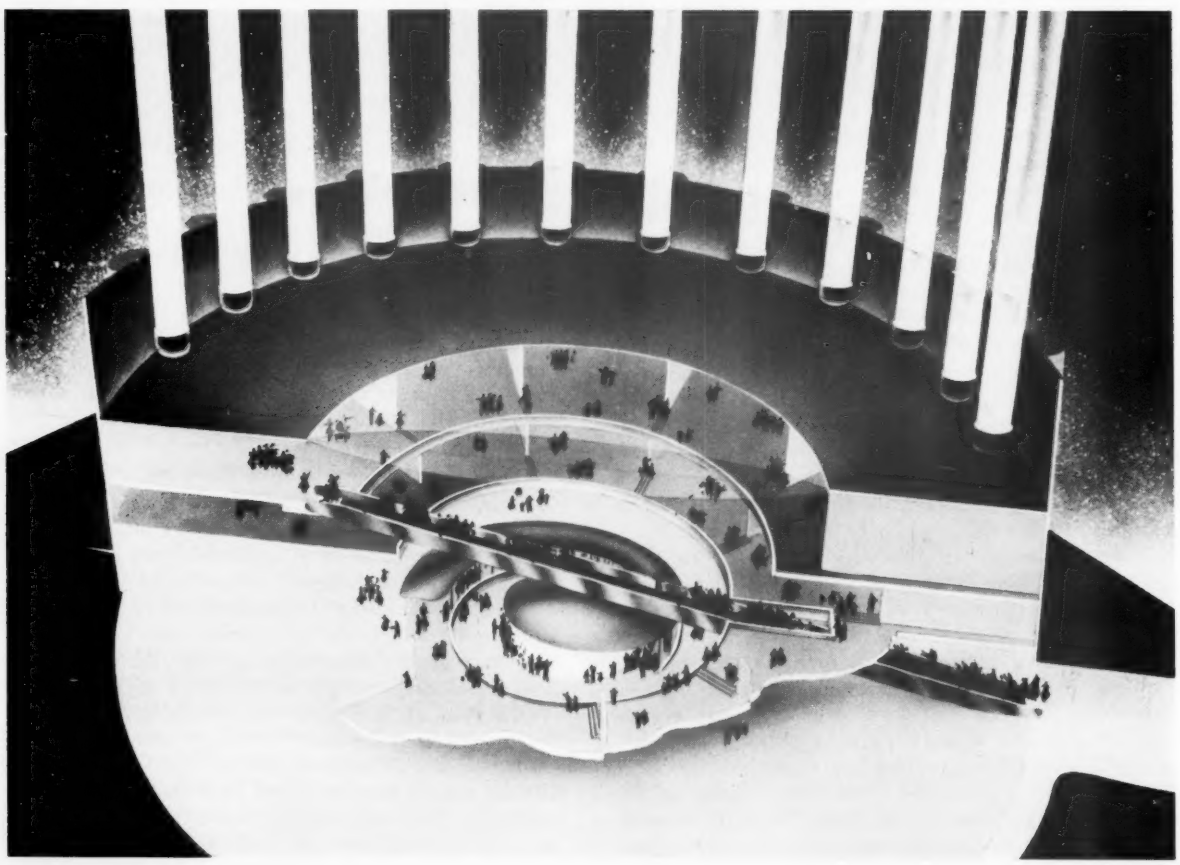
As a guide in the establishment of the final exhibit pattern, we are using seven major categories of displays on which to base our story:

1. A dramatic presentation will be developed to show the great abundance in electric power supply which the nation enjoys, and various aspects of the system which produces and distributes this energy.

2. The story of research, development and growth will be presented from Edison's initial pioneering contributions to the great power pools of today.

3. Displays will cover the price record, indicating

The cut-away below indicates the artist's conception of the basic interior layout of the tower of light building planned for the investor-owned electric companies for their exhibit at the 1964-65 New York World's Fair. Visitors will be conveyed on a moving ramp to the top of the 80-foot structure, and then will begin a spiral walk downward, viewing exhibits on all of the floors.



how the industry's development, under government regulation, has resulted over the years in a remarkable record of lower prices per kilowatt-hour, despite inflation and increasing costs of labor, material and supplies.

4. The uses of electric energy will be shown in a major portion of the exhibit, with exciting examples of applications in the home, on the farm, and in industry and commerce.

5. Financing the industry's growth in the free market will be given significant attention. Included will be displays on the industry's annual investment in new facilities and how it affects various phases of the economy, on the ownership of the industry, and on its tax contributions to all levels of government.

6. America's power supply compared with the rest of the world will form the basis of another category of displays, showing in different ways the electrical leadership position of the United States.

7. The climactic group of displays will be concerned with the industry's plans for the future, including what is expected from research and development in many fields of power production, distribution, and utilization.

I would like to emphasize that, in the final result, you may not recognize such a neat compartmentation of subjects, but as many as possible will be expressed in the most exciting terms possible. In whatever way our story is presented, and no matter how many elements it may include, our basic purpose will be to make sure that when a visitor leaves our building, he is convinced as never before that our industry is vitally concerned with his well-being, and that we can be counted on to continue to provide the best in electric service for his benefit now and in the future.

Visitors Are Customers

Because investor-owned companies serve about 80 percent of all electric utility customers in America, it is clear that most of our visitors will also be our own customers. For this reason we propose to make it possible somewhere in our building for our visitors to identify the name of their own companies back home. This will be accomplished through prominent and appropriate display of the names and symbols of the contributing companies. There will also be opportunities for special "days" at the Fair sponsored by individual companies supporting the project. There will be meeting-room and auditorium facilities in our building for the use of any groups the companies may plan to bring to the Fair from their service areas. Detailed information on this aspect will be supplied in plenty of time for planning purposes.

I feel, of course, that the Fair is truly a remarkable opportunity for everyone in our industry. Many have already been informed of the P&LE organization, plans, and proposed financing in letters which have have been sent to chief executives.

Support by the Industry

But I would like to indicate the extent of participation and support we have received to date as evidence of the over-all industry character of the Fair project.

The first evidence comes from the members of the World's Fair Committee, who also constitute the Board of Directors of P&LE. Besides myself, these gentlemen are:

Harllee Branch, Jr., President, The Southern Co., Inc.; H. J. Cadwell, President, Western Massachusetts Electric Co.; J. E. Corette, President, The Montana Power Co.; E. H. Dixon, President, Middle South Utilities, Inc.; C. E. Eble, President, Consolidated Edison Co. of N. Y., Inc.; Willis Gale, Chairman, Commonwealth Edison Co.; E. L. Lindseth, Chairman of the Board, The Cleveland Electric Illuminating Co.; D. C. Luce, President, Public Service Electric and Gas Co.; E. J. Machold, President, Niagara Mohawk Power Corp.; J. W. McAfee, President, Union Electric Co.; Harold Quinton, Chairman of the Board, Southern California Edison Co.; R. G. Rincliffe, President, Philadelphia Electric Co.; W. H. Sammis, President, Ohio Edison Co.; Philip Sporn, President, American Electric Power Co., Inc.; J. B. Thomas, Chairman of the Board, Texas Electric Service Co.; and J. J. Tuohy, President, Long Island Lighting Co.

Every one of these 17 electric company leaders has already pledged the financial support of his company to the P&LE exhibit. In addition, four other companies came in prior to the general solicitation. They are: The Connecticut Light & Power Co., Duquesne Light Co., Kansas Gas & Electric Co., and Northern States Power Co. I hope all of you will join us soon. You will be interested to know that $5 million has been committed already.

The Board of Directors of the P&LE exhibit, at its meeting on June 5, approved a budget of $6½ million for the entire cost of the project. This is of the same order of magnitude as the estimated exhibit costs of other organizations of similar character.

We have already been greatly assisted by the thoughts and efforts of many members of the industry, including the members of the EEI Sales Division Executive Committee and the EEI Public Relations Committee, and this we deeply appreciate.

Because every electric company in the nation will be benefited by the P&LE exhibit at the Fair, we are now seeking, and counting on, the widest possible financial support for this great undertaking. We have here an unparalleled opportunity to make contact with millions of our customers in a truly face-to-face way and, for this reason, we plan to have an exhibit that will be one of the Fair's principal attractions—and that will tell our industry's story as it has never been told before.

G. R. Conover, Vice President, Philadelphia Electric Co., accepts Reddy Kilowatt Annual Report Award plaque from Ashton B. Collins, President, Reddy Kilowatt, Inc. Philadelphia Electric won the top award in the annual contest. Award was presented at the EEI Convention in New York.

Philadelphia Electric Wins Reddy Kilowatt Report Award

AT the EEI Convention, awards were presented by Reddy Kilowatt, Inc., to 22 electric utility executives in recognition of the conciseness, clarity and appeal of their companies' annual reports for the year 1960.

The awards were presented by Ashton B. Collins, Reddy Kilowatt President. Mr. Collins said that the awards are made to encourage investor-owned utility companies to ". . . simplify, dramatize and humanize their annual reports in order to create greater stockholder interest in and understanding of the companies' operations."

The top award went to Philadelphia Electric Co., for general over-all excellence.

First awards in specific classes (depending on size and type of company) were won by Consumers Power Co., Arkansas Power & Light Co., The Hawaiian Electric Co., Ltd., Southern Nevada Power Co., American Electric Power Co., Inc., The Shawinigan Water and Power Co.

Those receiving honorable mentions were: Virginia Electric and Power Co., Northern States Power Co., Atlantic City Electric Co., Rochester Gas and Electric Corp., Northern Indiana Public Service Co., Tampa Electric Co., The Washington Water Power Co., Central Hudson Gas & Electric Corp., Central Louisiana Electric Co., Inc., Minnesota Power & Light Co., Southern Indiana Gas and Electric Co., Middle South Utilities, Inc., The Southern Co., C. A. La Electricidad de Caracas, Nova Scotia Light and Power Co., Ltd.

Judges in the contest were: J. C. Bevis, Chairman, Opinion Research Corp.; J. F. Childs, Vice President, Irving Trust Co.; Warren W. Shew, Publisher, *Electrical World* magazine; Harold H. Young, Limited Partner, Eastman Dillon, Union Securities & Co.

Representatives of electric utility companies cited in the annual Reddy Kilowatt Award competition are, front row, from left: R. E. Ginna, Rochester Gas and Electric Corp.; R. E. Ritchie, Arkansas Power & Light Co.; Harold Johnson, American Electric Power Co., Inc.; G. R. Conover, Philadelphia Electric Co.; Ashton B. Collins of Reddy Kilowatt, Inc.; A. H. Aymond, Jr., Consumers Power Co.; R. L. Summers, The Hawaiian Electric Co., Ltd.; W. R. Way, The Shawinigan Water and Power Co.; and J. F. Crist, The Southern Co. Second row, from left, are: F. S. Black, Tampa Electric Co.; B. D. Mitchell, Jr., Middle South Utilities, Inc.; J. P. Hayward, Atlantic City Electric Co.; A. B. Brown, Southern Indiana Gas and Electric Co.; K. M. Robinson, The Washington Water Power Co.; Hubbell Carpenter, Minnesota Power & Light Co.; R. M. Schahfer, Northern Indiana Public Service Co.; R. G. Erickson, Central Hudson Gas & Electric Corp.; A. H. McDowell, Jr., Virginia Electric and Power Co.; G. D. Anderson, Nova Scotia Light and Power Co., Ltd.; and E. H. Dixon, Middle South Utilities Co.

Participating in the ceremony installing a bust of Thomas Alva Edison in the Hall of Fame for Great Americans at New York University June 4, are from left: Sherman R. Knapp, President of the Institute; Mary Pickford, former motion picture star; and two of Edison's children, Mrs. Madeleine Edison Sloane, and Charles Edison, former Governor of New Jersey and Navy Secretary.

Edison Joins America's Great in NYU's Hall of Fame

A BRONZE bust of Thomas Alva Edison has been installed in the Hall of Fame for Great Americans on the Bronx campus of New York University.

At the installation ceremony, June 4, Brig. Gen. David Sarnoff, Chairman of Radio Corp. of America, called Edison the "father of modern research" for being the first to assign teams of talented workers to do research.

"Edison's message for our time as I interpret it," Mr. Sarnoff said, "is that we must work as a team, but we must not lose our sense of the uniqueness of man's genius, of the supreme value of the individual.

"In this lies the best safeguard against the deadly regimentation of communism. It is our best hope for a future of peace, abundance and freedom."

Sherman R. Knapp, President of the Institute, called Edison a "paragon among creators."

"The lamp Edison lighted eight decades ago marked the dawn of the electrical era," Mr. Knapp said. "The small dynamos that were the marvels of their time have evolved into gigantic generators . . . Millions of new jobs, entire new industries, and great advances in science and technology have been brought into being by the harnessing of electricity for the benefit of mankind."

The bust of Edison was created by Bryant Baker, whose busts of Dr. William Crawford Gorgas and Gen. Thomas J. (Stonewall) Jackson are also in the shrine. The bust was unveiled by two of Edison's children—Charles Edison, former Governor of New Jersey and former Secretary of the Navy, and Mrs. Madeleine Edison Sloane.

Among those also paying tribute to Edison were H. S. Firestone, Jr., Chairman, Firestone Tire and Rubber Co.; W. L. Cisler, President, The Detroit Edison Co., and President, the Edison Foundation; T. W. Martin, Chairman, Alabama Power Co.; and Giorgio Valerio, Managing Director, Societa Edison of Milan, Italy.

EEI Convention

(Continued from page 168)

Panel members included: G. W. McKinney, Jr., Assistant Vice President, Irving Trust Co.; F. D. Chutter, Industry Specialist, Massachusetts Investors Trust; E. B. White, Vice President, First National City Bank of New York; C. C. Glavin, Vice President and Director, The First Boston Corp.; and W. A. Doyle, Financial Writer, *New York World Telegram & The Sun*, and author of the syndicated column, "Daily Investor."

Maj. Gen. K. D. Nichols, USA, Ret., consulting engineer and former general manager of the U. S. Atomic Energy Commission, expressed belief that competitive atomic power in the nation's high-cost fuel areas can be achieved prior to the AEC's target date of 1968.

Urging support of atomic power, Gen. Nichols said "the attitude of the power industry toward support of this new industry may not only affect the rate of achievement, but also the extent and nature of government participation in the program."

R. M. Besse, President, The Cleveland Electric Illuminating Co., told the Convention that "tomorrow's managers can be as good as today's managers care to make them."

Whether tomorrow's managers "become champions or deteriorate to bush leaguers depends entirely on the vigor of the programs and systems designed to aid them," Mr. Besse said. He urged top executives in the electric utility industry to "assume personal direction of specific programs to achieve the best in management."

A. L. Cole, Vice President and General Manager, *The Reader's Digest*, told the Convention that "in spite of the wonderful job that the electrical industry has done for the American people and your efforts up to date to communicate that fact to the American people, I hope you will double your efforts in that direction in the future, and be more effective than ever. "This," he added, "is because I hope very much that it will never be necessary for my family, my business, or anyone else in America in the future to have to secure their electric service from any government."

One of the highlights of the Convention was a progress report on plans of the investor-owned electric companies for participation in the 1964-65 New York World's Fair.

E. R. Acker, Chairman of the Board, Central Hudson Gas & Electric Corp., and Chairman, EEI's 1964 World's Fair Committee, and President, Power & Light Exhibit, Inc., described the industry's plans for the fair. He said a rainbow-colored building 80 feet high (the maximum allowable height) would be erected.

"From the building's superstructure," he said, "a battery of searchlights will beam the greatest concentration of light ever generated straight up into the sky, and it is expected to be visible as far away as Boston and Washington, D. C.

"This 24-billion-candlepower beacon should help focus the public mind with great effect on our industry's exhibit—and on the fair itself."

Mr. Acker added that "because every electric company in the nation will be benefited by the P&LE exhibit at the fair, we are now seeking, and counting on, the widest possible financial support for this great undertaking."

Fleger Elected President

Philip A. Fleger, Chairman of the Board and President of Duquesne Light Co., was elected President of the Institute for the 1961-62 administrative year, succeeding Mr. Knapp.

In his remarks accepting the EEI Presidency, Mr. Knapp declared that "a new and greatly intensified campaign is being launched by the advocates of government power. We must be prepared to meet it."

In meeting this campaign, Mr. Fleger emphasized four points which the industry has in its favor: record of service; record of economy; record of vision; and record of citizenship.

"These are our strongest points," he told the Convention. "But we cannot stand on them alone. We must show the American people the weak points of government power."

President Fleger declared that "I am confident that we can overcome this new and greatly intensified campaign of the proponents of government power if the combined experience, strength, and wisdom of all of us in the investor-owned electric utility industry are working together, united for the common good."

Lynch Elected Vice President

W. W. Lynch, President of Texas Power & Light Co., was elected Vice President of the Institute, and H. S. Sutton, Treasurer of Consolidated Edison Co. of New York, Inc., was re-elected EEI Treasurer. Fifteen member-company executives were named to the Institute's Board of Directors for three-year terms. Edwin Vennard was re-elected Vice President and Managing Director, and A. B. Morgan was re-elected Secretary and Assistant Managing Director of EEI.

The Edison Award

The third annual presentation of The Edison Award, the industry's highest honor, was made June 7 to the Pennsylvania Electric Co., "for developing the engineering concept and pioneering in the design and actual construction of America's first 460-kv (460,000-volt) transmission line operating as a major component of an integrated power network."

The Award was presented to L. H. Roddis, Jr., President of Pennsylvania Electric, by Mr. Knapp at the close of the Convention.

Philadelphia Electric Co. received the Reddy Kilowatt Annual Report Award, which is given each year by Reddy Kilowatt, Inc. Ashton B. Collins, President of Reddy Kilowatt, Inc., presented the award to G. R. Conover, Vice President of Philadelphia Electric.

The Institute was host to the ladies at a luncheon

and fashion show on June 6 at the Astor Hotel. Then the ladies boarded an excursion boat for a cruise around Manhattan Island.

In closing the Convention, President Knapp expressed his appreciation to all who helped make the 29th Annual Convention of the Institute a success.

He thanked the Convention Program Committee, which consisted of H. J. Cadwell, President, Western Massachusetts Electric Co., Chairman; and C. E. Eble, President, Consolidated Edison Co. of New York, Inc.; O. T. Fitzwater, President, Indianapolis Power & Light Co.; N. R. Sutherland, President, Pacific Gas and Electric Co.; T. H. Wharton, President, Houston Lighting & Power Co.; and E. H. Will, Chairman of the Board, Virginia Electric & Power Co. He expressed his gratitude to the speakers, and thanked H. C. Forbes, Chairman of the Board of Consolidated Edison Co. of New York, Inc., and his associates for their hospitality. Appreciation was given to manufacturers, contractors, and financial houses for their cooperation, and to *Electrical World* magazine for its daily coverage of the Convention through the *Unconventional Daily*.

The Institutional Investor

(*Continued from page 230*)

stocks of those companies which investors feel will increase their earnings and dividends fairly consistently in the years ahead.

I shall not touch on the subject of when is high too high, but rather on why some electric utilities are considered growth stocks and some are not so regarded. In my opinion, such a differentiation is not warranted. We are not dealing with two distinct distribution curves, one for growth stocks and one for non-growth. Actually, there is but one distribution curve—the difference is one of degree only. All electric utilities have the potential of selling at materially higher prices. Whether they do sell at higher levels or not depends, to a large extent, on the ability of management, and management's understanding of what gives its stock a premium value.

What is it that the investor seeks? He seeks increasing earnings and dividends. He seeks a maximum positive growth factor and a minimum deviation from this trend. When management produces such records for a reasonable period of time, the investor is going to bid that stock up.

By way of illustration: company A is earning $2 per share and, on the basis of the record, no earnings growth may be expected. The market for this stock might well be something over $28 per share.

Company B is currently earning $2 per share, but the investor is convinced that, on the average over a long period of years in the future, it is reasonable to assume an earnings growth of 10 cents per share per year. It is my guess that such a stock will command a market price of more than $46. In other words, these figures imply that, in time, the investor will be willing to pay an $18 premium when he is convinced that the earnings will increase 10 cents per share per year indefinitely in the future. In brief, the investor is willing to pay a premium equal to 180 times the assumed annual increase in earnings. The size of this ratio must amaze many of you, as it does me. Of course, such a high ratio won't be attained overnight and may be materially lower under various conditions. Certainly, this prize is a big enough reward to challenge the best efforts and imagination of managements.

If any management adopts such a goal and sincerely tries to reach it, there will be renewed vigor and excitement in every department—especially if you have a stock option plan.

The following are but a few of the areas which might well be considered in trying to reach this goal:

- The importance of an adequate and stable rate of return or an improving rate of return will be obvious. Anything less will be unsatisfactory.
- A complete re-examination of rate structures may be called for. Are the incremental profits on added business improving the rate of return? If not, definite action in this area is indicated.
- Is the capital expenditure program overly ambitious? Is the reserve capacity excessive? Can unneeded blocks of power be sold to a neighbor? Can needed power be purchased from a neighbor, deferring a unit for a year or so?
- Budgetary control and forecasting more than one year in advance will assume even greater importance than in the past.
- Sales promotion activities will be scheduled with great care.

If management is convinced of the importance of this earnings objective, it will not be long before management will demonstrate its ability to bring about the desired earnings trend. But how is this confidence to be transmitted to the investor and to the market place?

Management must come to the decision as to what the annual increase in earnings should be. Then it should select that percentage of the annual increase in earnings which might reasonably be paid out in increased dividends each year. This is the best way I know for management to transfer its enthusiasm and confidence to shareholders. For some reason or other, dividend action is a language which all investors seem to understand perfectly.

When your shareholders say to themselves and to others, "I received and 8-cent increase in dividends from the XYZ utility in the first quarter of this year and I am sure that I will get another one of like amount in the first quarter of next year," your stock will then be a full-fledged "growth stock." In short, you will be able to do all the equity financing you need to do, while strengthening, rather than diluting, the interests of the old investor.

Tomorrow's Managers

(Continued from page 245)

needed to make it competitive. Good salary administration requires: written job descriptions; well-defined job grades; formalized job evaluation; precise dollar ranges within job grades; continuously maintained measures and standards of salary levels; written guides to salary administration; appraisals to determine performance levels; salary spreads that reflect differences in performance in the same job; controls to keep the whole salary application keyed to contribution; reports to insure review and maintenance of the system.

On top of this basic foundation there must be those incentives for both outstanding performance and outstanding performers that induce the best men to achieve their best. Ours is a competitive society. Competition is based on the philosophy that one man will try to do better than another if he is rewarded for it. In business that reward is money. If a salary system is not designed to produce this result, it is not keyed to our competitive incentive system and cannot be expected to produce the optimum in management.

A sound salary structure alone will not insure success in attracting and retaining a proper share of tomorrow's managers. To be competitive, a well-rounded compensation program must include those special features which general industry has found to be effective. Consideration, therefore, should be given to the incentive factor in such things as:

1. Pensions.
2. Group life insurance.
3. Deferred compensation.
4. Bonuses.
5. Stock options.

This is what the manager market requires today. We must either remain competitive with the market or be content with a second-grade team.

In conclusion I must add that the methods and techniques I have described are not original with me. They are summarized from the almost unanimous pattern of recommendations by the leading consultants in the country and the tested experience of those companies which have researched and applied these techniques in depth.

But I will leave with you three things that are entirely my own opinion:

I believe that unless we solve the problem of better managers for tomorrow we will not be assured of solving any problems;

I believe that tomorrow's managers can be as good as today's managers care to make them;

And I believe that the people in the electric industry have the responsibility to see to it that this industry is endowed with the best managers obtainable.

For who is wise enough to say that we will not need them?

A limited number of copies are still available of this issue of the

EEI
BULLETIN

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New York 17, N. Y.

Price Schedule

1-24 copies $1.00 each
25-99 copies 75 cents each
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Live Better Electrically

(Continued from page 223)

than a million dollars per year, and it would mean the elimination of our present strong magazine campaign. Television is not a forgotten subject, nor one that we have discarded. We aren't ready for it at the moment, but we're very much keeping in touch with its future possibilities for the Live Better Electrically program.

Another way to look at the current LBE schedule is to show how the budget concentrates on the various subjects treated in the LBE ads. Of the total 65 ads this year, all except the appliance ads feature electric house heating, giving a total of 52 ads on this critically important subject—another example of concentration and impact.

Our media schedule is designed to give us a leadership look. The LBE program is the second-largest advertiser in *Better Homes & Gardens.*

It is within the top 15 or 20 in *Life* and *Post,* among the thousands of advertisers using those publications.

One of the primary purposes of the LBE program is to develop basic advertising themes and encourage utilities, manufacturers and our many allies to use them in their own advertising. This has the effect of multiplying our own direct investment in Live Better Electrically, but more than that, it gives the electric industry a common sales theme and a program of cooperative sales effort that we have never had before. This is Live Better Electrically's role as an industry leader. It is obvious that if all the advertising strength of our industry can be brought to bear on this total electric living crusade the impact upon the public can be enormous.

How is this working out? The local investments of LBE member companies—the amount of money these utilities will invest this year in advertising time and space—total $30,521,000. These utilities will invest another $102,000 in point-of-sale materials purchased from Live Better Electrically.

What about the manufacturers? Westinghouse said, "Our policy will be to cooperate with you in helping to put this idea 'flameless' across to the American public. Its use by Westinghouse would be on all product advertising." The total electric Gold Medallion Home program of Westinghouse has been a strong supporter of our cause. As an industry we are indebted to Westinghouse for coining the term "total electric" which so aptly describes the concept we are trying to sell. In three years that company has spent more than $9 million to support LBE sales themes in print and on network television.

A similar letter from General Electric said, "All departments where the message is applicable have agreed to use 'flameless' in their advertising and promotional literature."

General Electric is continuing its fine support with an impressive advertising and promotion campaign from its range department—an investment of some $1½ million. Frigidaire will support the LBE themes by using *flameless* in all its national range advertising. Similarly, we have had promises of strong support of "flameless" from Kelvinator, Hotpoint, Thermador, Weigand and Electromode. Many other manufacturers have promised support of Live Better Electrically themes. In 1961, featuring LBE themes, manufacturers will invest over $20 million, to which the utilities will add $30½ million in their own local efforts, and our own efforts of $2½ million—a total of more than $53 million (Fig. 4).

Few industries can match this kind of power. And it all has but one purpose: to assure your customers that electric living is a practical and wonderful new way of life, and thus the way is paved for your local selling program. The payoff is local. Advertising builds a bridge half-way across the river. Local selling completes the bridge. Thus, the two work together.

There's another strong source of support that helps to tell the LBE story: publicity. There have been 146 stories in consumer and trade publications in the last year. The big wire services—AP and UPI—have handled eight major features on Live Better Electrically, reaching over 115 million readers in the United States. Here is what *Electrical World* had to say in recent editorial comment: "The Live Better Electrically program is now under a full head of steam and finally showing the results and punch foreseen under its original goals. . . Everyone in the industry benefits from the Live Better Electrically program. . . A united electric utility effort is needed if we are to continue to compete successfully for customer preference."

We have told the Live Better Electrically story at various industry meetings. In the last year, presentations have been made at more than 75 meetings in all sections of the country before more than 15,000 key industry people.

That's the Live Better Electrically story. You've seen how we carefully base our approach on research-tested methods. In fact, to assure the continuity of the Live Better Electrically program, two new research projects are now in the works: one on electric house heating; the second, a basic consumer attitude study. We are successfully placing the majority of our funds right where it counts—in advertising space, a fact made possible by good staff management. We are making friends and moving ahead in all ways. The start made so auspiciously in 1960 with our key word "flameless" is continuing in 1961, and it will continue to be our theme into 1962. We have taken a big step, but this is only the beginning! There is much to do ahead before we achieve the full stride in promoting electrical living. You have every reason to be proud to be a part of the Live Better Electrically program!

CONVENTIONS and MEETINGS

1961

July

20 EEI Industrial Relations Committee, Roosevelt Hotel, New York City, N. Y.

August

23-25 AIEE Pacific General Meeting, Salt Lake City, Utah

September

10-13 Rocky Mountain Electrical League Annual Fall Convention, Jackson Lake Lodge, Moran, Wyo.

11-12 EEI-AGA Accounting Division and Section Organization Meetings, Netherland Hilton Hotel, Cincinnati, Ohio

14 Vermont Electrical Association Fall Outing, Lake Morey Inn, Fairlee, Vt.

14-15 ASME-AIEE Engineering Management Conference, Roosevelt Hotel, New York City, N. Y.

14-16 Public Utilities Association of the Virginias Annual Meeting, White Sulphur Springs, W. Va.

20-21 PIP 1961 Workshop Conference, Brown Palace Hotel, Denver, Colo.

20-22 IIFEUC Eighth Annual National Electric Farm Power Conference, Leamington Hotel, Minneapolis, Minn.

20-22 NELPA 5th Annual Meeting, Sheraton-Portland Hotel, Portland, Ore.

21-22 Missouri Valley Electrical Association Accounting Conference, Sheraton-Jefferson Hotel, St. Louis, Mo.

24-27 ASME-AIEE National Power Conference, Sir Francis Drake Hotel, San Francisco, Calif.

25-26 PEA Accident Prevention Committee, Philadelphia, Pa.

25-27 EEI Industrial Relations Committee 14th Annual Round Table Conference, Drake Hotel, Chicago, Ill.

25-27 EEI Meter and Service Committee, Leland Hotel, Springfield, Ill.

27-28 PEA Annual Meeting, Bellevue Stratford Hotel, Philadelphia, Pa.

27-29 Missouri Valley Electrical Association Sales, Rural and Home Service Conference, President Hotel, Kansas City, Mo.

28-29 Southeastern Electric Exchange Accounting Section Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

October

1- 7 Electric Council of New England Management Training Course, Bald Peak Colony Club, Melvin Village, N. H.

2- 3 Electric Council of New England Residential Sales Workshop, Hotel Wentworth-by-The-Sea, Portsmouth, N. H.

2- 3 Iowa Utilities Management Conference, Ft. Des Moines Hotel, Des Moines, Iowa

2- 4 EEI Prime Movers Committee, Continental-Denver Hotel, Denver, Colo.

4- 6 Indiana Electric Association, 52nd Annual Convention, Sheraton Hotel, French Lick, Ind.

12-13 EEI Transmission and Distribution Committee, Ft. Des Moines Hotel, Des Moines, Iowa

15-20 AIEE Fall General Meeting, Detroit, Mich.

15-20 National Safety Congress, Chicago, Ill.

16-18 NELPA Business Development Section Joint Meeting with Rate Research Committee and Public Relations and Advertising Committee, Davenport Hotel, Spokane, Wash.

18-19 Wisconsin Utilities Association Electric, Gas Operating and Sales Sections' Convention, Schroeder Hotel, Milwaukee, Wis.

18-20 Electric Council of New England 5th Annual Conference, Hotel Somerset, Boston, Mass.

23-24 EEI Electrical Systems and Equipment Committee, The Jack-Tar Hotel, San Francisco, Calif.

26-27 Southeastern Electric Exchange Engineering and Operation Section Conference, Buena Vista Hotel, Biloxi, Miss. (Closed Session).

26-27 PCEA Hawaiian Conference, Princess Kaiulaui Hotel, Honolulu, Hawaii

30-Nov. 1 EEI Insurance Committee, St. Petersburg, Fla.

November

9-11 PIP—1961 National Youth Conference on the Atom, The Palmer House, Chicago, Ill.

12-15 Air Conditioning and Refrigeration Institute Annual Meeting, The Homestead, Hot Springs, Va.

13-17 NEMA Annual Meeting, Traymore Hotel, Atlantic City, N. J.

14-15 EEI Eighth Annual Area Development Workshop, DuPont Plaza Hotel, Miami, Fla.

15-17 Southeastern Electric Exchange Sales Advertising and Public Relations Conference, Tides Hotel, St. Petersburg, Fla.

26-Dec. 1 ASME Winter Annual Meeting, Statler Hilton Hotel, New York City, N. Y.

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